The INTERMAG 2021 Conference was due to be held in Lyon, France, 26-30 April 2021. Unfortunately, the ongoing COVID-19 pandemic and associated economic crisis meant that there was considerable uncertainty about the ability and willingness of our attendees to travel internationally. Owing to this uncertainty, the INTERMAG 2021 Management Committee, with the approval of the IEEE Magnetics Society Conference Executive Committee, decided to change the conference format from a face-to-face meeting to a virtual one.

With that said, we are excited to bring you the INTERMAG 2021 Virtual Conference! The program will consist of prerecorded talks that will be made available to registered attendees on-demand starting 19 April 2021. To best serve our global community, the Conference will schedule live programming, including Q&A sessions, during the four “golden global hours,” or "Zones" as follows:

- **Zone 1:** Best for Asia (morning) and US (evening of the day before)
- **Zone 2:** Best for Europe and Asia
- **Zone 3:** Best for Europe, Asia and Eastern US
- **Zone 4:** Best for Europe and US

All live events and sessions will be recorded and together with all the prerecorded content, made available to registered attendees, along with all the prerecorded content, until 30 June 2021 (60 days after the Conference ends).

**Attendees are highly encouraged to view the prerecorded talks beginning 19 April and submit questions to the presenters via the chat boards. Presenters will be monitoring these chat boards daily.**

Live Sessions will take place during the Conference week, 26-30 April. These live sessions will be for Special Sessions, Symposia Invited Talks, Focus Sessions, and the Plenary and Awards Session, and will include brief summary talks followed by live Q&A. Again, attendees are highly encouraged to watch the prerecorded talks and submit questions in advance. Note that contributed oral and poster sessions will hold Q&A via the chat boards only.
SPECIAL SESSIONS

Tutorial: Magnetism and the Environment

Session Chair: Johannes Paulides (AE Group)

Live Session - Monday, 26 April
9:00 pm CST (Asia)
3:00 pm CEST (Europe)
8:00 am CDT (US)

This Tutorial will feature three prerecorded invited talks available on-demand starting 19 April 2021. During the Live Session, the speakers will each give a brief summary of their talk, followed by a live Q&A.

Electricity is the best suited vector of energy to meet the challenges of our societies. It allows an increase in energy efficiency and a reduction in polluting emissions. Electric machines are one of the most important, if not the most important, components of electrical energy production and conversion process. They are present upstream and downstream from this process. Upstream, electric generators allow converting mechanical energy into electrical energy. They can be found in power plants, wind turbines, in motor vehicles, and aircrafts. Downstream, motors and electric actuators allow converting electrical energy into mechanical work. The symposium will provide a state-of-the-art on electric machines and actuators and different aspects related to electric machines and actuators analysis, design and applications. The emphasis is on newly developed structures, and new challenging applications, such as high temperature superconducting machines, hybrid excited synchronous machines, high power density electric machines, high speed machines, offshore wind turbine generators, racing car traction, and maglev trains both from an academic and industrial point of view.

Attendees are highly encouraged to view the prerecorded talks beginning 19 April and submit questions via the chat boards. Presenters will be monitoring these chat boards daily and will also answer questions during the live session.

Magnetic Refrigeration: From Fundamentals to Applications
Oliver Gutfleisch (TU Darmstadt)

Magnetics of Motor Drive System for Electrical Vehicle
Keisuke Fujisaki (Toyota Technological Institute)

Rare Earth Magnet Recycling: The Missing Link in a Circular Economy
Kiril Mugerman (Geomega Resources)
Symposia

Each Symposium will feature six prerecorded invited talks, available on-demand starting 19 April 2021. During the Live Session, the speakers will each give a brief summary of their talk, followed by a live Q&A.

Attendees are highly encouraged to view the prerecorded talks beginning 19 April and submit questions via the chat boards. Presenters will be monitoring these chat boards daily and will also answer questions during the live session.

**AA: Progress and Prospects of Advanced Magnetic Microscopies**
Live Session: Monday, 26 April
11:00 pm CST (Asia)
5:00 pm CEST (Europe)
10:00 am CDT (US)

**BA: Electrical Machines and Drives 2020 and Beyond**
Live Session: Tuesday, 27 April
3:00 pm CST (Asia)
9:00 am CEST (Europe)
2:00 am CDT (US)

**CA: Spin Conversion Efficiency by Various Methods Towards Device Applications**
Live Session: Tuesday, 27 April
9:00 pm CST (Asia)
3:00 pm CEST (Europe)
8:00 am CDT (US)

**DA: 2D Materials for Spintronics**
Live Session: Wednesday, 28 April
8:00 am CST (Asia)
2:00 am CEST (Europe)
7:00 pm CDT (US - Tuesday evening)

**EA: Spin Angular Momentum Transport: Spin Waves Pushing New Frontiers**
Live Session: Wednesday, 28 April
11:00 m CST (Asia)
5:00 pm CEST (Europe)
10:00 am CDT (US)

**FA: Terahertz Spintronics**
Live Session: Thursday, 29 April
3:00 pm CST (Asia)
9:00 am CEST (Europe)
2:00 am CDT (US)

**GA: Spintronics for Probabilistic Computing**
Live Session: Thursday, 29 April
9:00 pm CST (Asia)
3:00 pm CEST (Europe)
8:00 am CDT (US)

Live Session: Friday, 30 April
9:00 pm CST (Asia)
3:00 pm CEST (Europe)
8:00 am CDT (US)

View Speakers for Symposia here:
12th MRAM Global Innovation Forum

Chair: Bernard Dieny (CEA/SPINTEC)
Co-Chairs: Kevin Garello (SPINTEC) and Luc Thomas (Applied Materials)

Live Session - Tuesday, 27 April
8:00 am CST (Asia)
2:00 am CEST (Europe)
7:00 pm CDT (US) NOTE: This is Monday evening, 26 April.

This one-day Forum will feature ten prerecorded invited talks available on-demand starting 19 April 2021. The Forum will give an overview of the present status of industrial MRAM development and discuss the foreseen evolutions. During the Live Session, each speaker will give a brief summary of their talk, followed by live Q&A. Immediately after, there will be a live panel discussion, focusing on such topics as what we need to do bring MRAM to the next level, and what breakthroughs do we need to make MRAM (or spintronics) an integral part of CMOS electronics at advanced nodes.

Attendees are highly encouraged to view the prerecorded talks beginning 19 April and submit questions via the chat boards. Presenters will be monitoring these chat boards daily and will also answer questions during the live session.

Invited Talks and Live Q&A:
Moderator: Kevin Garello (SPINTEC)

**MRAM Physics, Materials and Process Integration**
Tiffany Santos (Western Digital)
Sahil Patel (Applied Materials)

**MRAM Product Development**
Eric Edwards (IBM)
Jeong-Heon Park (Samsung)
Johannes Muller (Global Foundries)
Yuan-Jen Lee (TSMC)

**Design-technology Interaction**
Shinobu Fujita (Kioxia)
Jack Guedj (Numem)

**Beyond STT-MRAM**
Shunsuke Fukami (Tohoku University)
Manu Perumkunnil (IMEC)

Panel Discussion: What do we need to bring MRAM to next level?
Moderator: Luc Thomas (Applied Materials)

Simone Bertolazzi (Yole)
Gouri Sankar Kar (IMEC)
Daniel Worledge (IBM)
Seung Kang (Qualcomm)
Ko-Min Chang (NXP Semiconductor)

View MRAM Forum speaker bios here: https://intermag.org/mram-forum-biographies

View MRAM Forum brochure here:
https://intermag.org/storage/app/media//Documents/12th%20MRAM%20Forum%20Brochure%20Complete.pdf
Focus Sessions

Focus Sessions will each feature six prerecorded talks (three invited and three contributed), available on-demand starting 19 April 2021. During the Live Session, the invited speakers will each give a brief summary of their talk, followed by a live Q&A.

Attendees are highly encouraged to view the prerecorded talks beginning 19 April and submit questions via the chat boards. Presenters will be monitoring these chat boards daily and will also answer questions during the live session.

YA: Bench to Bedside Transition of Biomagnetic Research: How Close Are We?
Live Session: Tuesday, 27 April
4:30 pm CST (Asia)
10:30 am CEST (Europe)
3:30 am CDT (US)

Biological applications of magnetic fields and magnetic materials cover a variety of research areas from human and animal health through food safety to environmental issues. Magnetism contributes to proposed solutions for detection, diagnosis and prognosis, and for therapy or treatment. While some of these applications show promise, others are already a reality. This symposium will gather successful cases in which magnetism is used for life sciences. We will learn how far we are in magnetic neurostimulation, imaging, biosensing, or cancer fight. This session will attract specialists in magnetic sensors, fluids and rheology, nanomaterials or micromagnetics, and an audience interested in finding out more on how magnetism can contribute to health and life care. The invited lectures will cover hot topics of biomedical applications of magnetism:

- Fast low-cost magnetic resonance imaging as an alternative to X-radiation for hard tissue: How far are we from seeing this in dental clinics?
- Tumor therapy by magnetic particle vibrations
- Imaging and quantifying transition metal ion in human brain for early detection and diagnosis of neurodegenerative disorders

YB: Magnetorheological Composite Materials and Applications
Live Session: Tuesday, 27 April
10:30 pm CST (Asia)
4:30 pm CEST (Europe)
9:30 am CDT (US)

This focus session seeks to highlight key new advances in the field of magnetorheological composite materials (MCMs). MCMs are composites that disperse magnetic particles, such as ferromagnetic spherical particles, flakes, or rods, in a matrix material that can vary from a lightly viscous fluid to a highly viscous grease, to a soft polymer or viscoelastic solid. These talks will describe how magnetic particles, dispersed in a matrix, can be used to developed MCMs with field controllable damping, stiffness and other mechanical, electrical, or thermal properties. These will also include key background explaining relevant practical applications, and how the tools of magnetism are exploited to meet the requirements of these applications. This symposium will clarify for non-experts, with backgrounds in magnetics, some of the key opportunities for applications of such MCMs in aerospace and automotive vehicles, as well as component level applications such as dampers, isolators, inerter, or actuators. Each speaker will also provide an assessment of their materials and application, and describe the key challenges remaining for successful practical implementation. The key objective of this symposium is to provide a broad perspective on magnetorheological composite materials utilizing various types of matrix materials and utilizing magnetic fields to create anisotropies in the composite.

View Speakers for Focus Sessions here:
IEEE Magnetics Society Award Ceremony and Plenary Session

Co-Chairs: Juergen Fassbender (HZDR, IEEE Magnetics Society Honors & Awards Committee Chair) and Bernard Dieny (CEA/SPINTEC, INTERMAG 2021 Conference Chair)

Live Session - Wednesday, 28 April
8:30 pm CST (Asia)
2:30 pm CEST (Europe)
7:30 am CDT (US)

The IEEE Awards Ceremony will recognize awardees from both 2020 and 2021, and the Plenary Session will immediately follow. The two prerecorded Plenary Talks will be available on-demand starting 19 April 2021. During the Live Session, the Plenary Speakers will each give a brief summary of their talk, followed by a live Q&A.

Attendees are highly encouraged to view the prerecorded talks beginning 19 April and submit questions via the chat boards. Presenters will be monitoring these chat boards daily and will also answer questions during the live session.

Welcome
Masahiro Yamaguchi, Tohoku University, IEEE Magnetics Society President

IEEE Magnetics Society Awards Presentation

Jürgen Fassbender, HZDR, IEEE Magnetics Society Honors & Awards Committee Chair

Congratulations to the 2020 Achievement Award Winner:
Chia-Ling Chien, Johns Hopkin University
For pioneering discoveries in magnetic materials, nanostructures, and spin phenomena; for training young researchers; and providing invaluable service to the community.

Congratulations to the 2021 Achievement Award Winner:
Eric Fullerton, University of California, San Diego
For groundbreaking and sustained contributions to the invention and development of modern exchange-coupled magnetic recording media and devices.

Congratulations to the 2021 Mid-Career Award Winner:
Geoffrey Beach, MIT Boston
For pioneering contributions to the understanding of chiral exchange interactions, spin-orbit torques, domain wall and skyrmion dynamics in magnetic films, heterostructures and nanostructures. Awarded in 2021 for the first time.

Congratulations to the 2020 Early-Career Award Winner:
Jean Anne Incorvia, University of Texas at Austin
For contributions to implementation of von Neumann and neuromorphic magnetic computing prototypes using spins in two-dimensional systems.

Congratulations to the 2021 Early-Career Award Winner:
Kerem Camsari, University of California, Santa Barbara
For contributions to the theory and practice of using low barrier nanomagnets for probabilistic computing.

Congratulations to the 2020 Distinguished Service Award Winner:
Gareth Hatch, Strategic Materials Advisors Ltd.
In recognition of a decade of outstanding service as Editor of the Magnetics Society Newsletter, and in particular for transforming it into a modern and engaging communications vehicle that is available through multiple channels.

Congratulations to the 2021 Distinguished Service Award Winner:
Manuel Vázquez, Spanish National Council for Research, CSIC, Madrid
For tremendously strengthening IEEE Magnetics Society outreach worldwide and dedicated efforts to engage new people in service to the society.
Awards and recognition will also be given to the Distinguished Lecturers, Summer School Award Winners, Best Student Presentation Finalists, and Magnetism as Art Finalists.

**Plenary Talk Introductions**

**Bernard Dieny** CEA/SPINTEC, INTERMAG 2021 Conference Chair

**Antiferromagnetism: Celebrating 50 years since the Nobel Prize**

*Ivan K. Schuller*, Distinguished Professor of Physics Chair, Center for Memory and Recording Research, University of California, San Diego

Dr. Ivan Schuller, a member of the Latin American, Chilean, Spanish, Colombian, Belgian, Latin American Academies and a fellow of the American Academy of Arts and Sciences, has won major science and TV prizes including the American Physical Society (Wheatley and Adler), Materials Research Society (Medal and Somiya), Department of Energy (Lawrence), Department of Defense (Vannevar Bush), European (Humboldt and Lise Meitner) and several regional Emmys. His more than 600 papers and 20 patents established the field of metallic superlattices key for the start of Spintronics, determined the structure of YBCO high temperature superconductor, and established the phenomenology of many hybrid heterostructures including exchange bias. His recent basic research on the properties of quantum-materials has direct relevance for Energy Efficient Bioinspired Computing and Sensors.

**From Spin-Resolved Atomic-Resolution Imaging to Magnetic Materials and Devices by Design**

*Roland Wiesendanger*, Professor of Experimental Physics, University of Hamburg

Dr. Roland Wiesendanger’s scientific interests include nanomagnetism and nanospintronics, unconventional superconductivity and topological physics. Since the end of the eighties, he has pioneered the technique of Spin-Polarized Scanning Tunneling Microscopy (SP-STM) which allowed the first real-space observation of magnetic structures at the atomic level, leading to numerous discoveries of novel types of magnetic states and phenomena in low-dimensional systems. In particular, Dr. Wiesendanger and his team discovered chiral magnetic domain walls, spin spirals and individual nano-scale magnetic skyrmions in ultrathin films and demonstrated that skyrmions can be individually written and deleted by vertical injection of spin-polarized currents or by local electric fields. Moreover, based on SP-STM studies of individual magnetic atoms and their distance-dependent interactions, all-spin atomic-scale devices could be demonstrated by combining single-atom manipulation techniques with spin-sensitive imaging at the atomic scale. Time- and spin-resolved studies led to fundamental insight into thermally and spin-current induced magnetization switching down to the atomic level.

Attendees are highly encouraged to view the prerecorded talks beginning 19 April and submit questions via the chat boards. Presenters will be monitoring these chat boards daily and will also answer questions during the live session.

**Women in Magnetism Networking Event**

**Chair:** Sara Majetich, Carnegie Mellon University, INTERMAG 2021 Program Co-Chair

**Live Session: Wednesday, 28 April**

12:30 am CST (Asia, Thursday morning)  
6:30 pm CEST (Europe)  
11:30 am CDT (US)

Expand your professional network! Don’t miss the Virtual Women in Magnetism Networking Event. This is an opportunity to become acquainted with women in the profession and to discuss a range of topics including leadership, work-life balance, and professional development. All students, researchers and retirees are encouraged to attend.
Meet the Experts

This event provides young researchers with the exclusive opportunity to participate in a small-group video discussion and get expert advice on career planning, technical paper writing and publication, job searches and interviews, society involvement, and more. **Pre-registration is required.**

Each participant will be asked to create one slide to share with their expert in advance of the session to include your background, expertise, areas of interest, research, etc. These “ice-breaker” slides will be used to help facilitate a productive discussion. Instructions for when and where to send your slide will be sent to you after you register.

**IMPORTANT NOTE:** These sessions are limited to 20 students per expert and are extremely popular! Please make every effort to let us know in advance if your plans change and you are unable to attend.

**SESSION 1: Thursday, 29 April** (Pre-registration is required.)

2:00 pm CST (Asia)  
8:00 am CEST (Europe)  
1:00 am CDT (US)

**Experts:**
- Shunsuke Fukami (Tohoku University) - Spintronic & Recording, Materials & Phenomena
- Min-Fu Hsieh (National Cheng Kung University) - Motor & Power
- Teruo Ono (Kyoto University) - Spintronic & Recording, Materials & Phenomena
- Shinji Yuasa (AIST) - Spintronic & Recording, Materials & Phenomena
- Weisheng Zhao (Beihang University) - Spintronic & Recording, Materials & Phenomena

**SESSION 2: Thursday, 29 April** (Pre-registration is required.)

12:00 am CST (Asia)  
6:00 pm CEST (Europe)  
11:00 am CDT (US)

**Experts:**
- Joe Davies (NVE) - Instrumentation, Sensors & Interdisciplinary
- Cindi Dennis (NIST) - Biomagnetism
- Liesl Folks (University of Arizona) - Spintronic & Recording, Materials & Phenomena
- Ravi Hadimani (VCU) - Biomagnetism
- Mark Kief (Seagate) - Spintronic & Recording, Materials & Phenomena
- Tiffany Santos (Western Digital) - Spintronic & Recording, Materials & Phenomena
- Mingzhong Wu (Colorado State University) - Spintronic & Recording, Materials & Phenomena

**SESSION 3: Friday, 30 April** (Pre-registration is required.)

8:00 pm CST (Asia)  
2:00 pm CEST (Europe)  
7:00 am CDT (US)

**Experts:**
- Johan Akerman (NanOsc) - Spintronic & Recording, Materials & Phenomena
- Alina Deac (Helmholtz-Zentrum Dresden-Rossendorf) - Spintronic & Recording, Materials & Phenomena
- Claude Fermon (Universite Paris-Saclay) - Spintronic & Recording, Materials & Phenomena
- Atsufumi Hirohata (University of York) - Spintronic & Recording, Materials & Phenomena
- Jurgen Kosel (Kaust) - Instrumentation, Sensors & Interdisciplinary
- Johannes Paulides (AE Group) - Motor & Power

View the Expert's Bios here: [https://intermag.org/expert-bios](https://intermag.org/expert-bios)
Entrepreneurship Session: Launching a Start-up Company

Chair: Stephane Mangin (University of Lorraine)

Live Session: Thursday, 29 April
8:00 pm CST (Asia)
2:00 pm CEST (Europe)
7:00 am CDT (US)

This special session will feature three speakers from Europe, USA and Asia, who will share their experience in launching a start-up company. The three prerecorded invited talks will be available on-demand starting 19 April 2021. During the Live Session, these speakers will each give a brief summary of their talk, followed by a live Q&A moderated by the Session Chair.

Attendees are highly encouraged to view the prerecorded talks beginning 19 April and submit questions via the chat boards. Presenters will be monitoring these chat boards daily and will also answer questions during the live session.

Speakers:
Jean Pierre Nozières, President and CEO, Antaios
Jean-Pierre is the founder of four MRAM-related start-ups: Crocus Technology, where he served as CTO, eVaderis, Hprobe and Antaios for which he currently serves as President and CEO. He is a research director from CNRS, France’s largest research organization and he was up to 2015 the founder and Executive Director of Spintec laboratory, from which Antaios was spun-off. Jean-Pierre also worked in the past at IBM’s Storage System Division and Applied Magnetics Corporation in the US. He graduated from Grenoble INP and holds a PhD in Physics from Grenoble University.

Andrew Kent, Professor of Physics, Founding Director, Center for Quantum Phenomena, New York University
Andrew Kent is a Professor of Physics and Founding Director of the Center for Quantum Phenomena at New York University. His research interests are in the physics of magnetic nanostructures, nanomagnetic devices and magnetic information storage. In 2007 he founded Spin Memory Inc., a company based in Fremont, California, developing spin torque magnetic random access memory devices he invented at NYU. Kent is a fellow of the American Physical Society (APS), has served as chair of APS topical group on magnetism and its applications (GMAG) and is an advisory board member of the Committee of Concerned Scientists. Kent accomplishments were recognized by an Honorary Doctorate from the University of Lorraine (“Docteur Honoris Causa” de l’Universite de Lorraine), in September 2013. He received the French Jean d'Alembert Research Fellowship in 2017 and was named Professor at Lorraine in the 2018 Lorraine University Excellence Initiative.

Xueying Zhang, Assistant Professor, Beihang University
Xueying Zhang was born in China in 1987. He received B.S. and M.E. degrees from the Ecole Centrale de Pekin, Beihang University, Beijing, China, in 2011 and 2014, respectively, and double Ph.D. degrees from Beihang University and University Paris-Saclay in 2018. His current research interests include the domain wall motion in ferromagnetic nanowire, the excitation and propagation of spin wave, and magneto dynamic measurements via magneto-optical Kerr effect.
Virtual Bierstube

Keeping the tradition alive! Our most popular Conference event has gone virtual. Create your own avatar and join us for a virtual bierstube set in a beautiful park. It’s almost like being in Lyon!

BYOB (bring your own beverage)

To best serve everyone’s happy hour, we are offering three different virtual bierstuben:

**Monday, 26 April**
- 12:30 am CST (Asia, Tuesday)
- 6:30 pm CEST (Europe)
- 11:30 am CDT (US)

**Tuesday, 27 April**
- 7:00 am CST (Asia)
- 1:00 am CEST (Europe)
- 6:00 pm CDT (US)

**Thursday, 29 April**
- 4:30 pm CST (Asia)
- 10:30 am CEST (Europe)
- 3:30 am CDT (US)

Magnetism as Art Showcase

INTERMAG 2021 will host a virtual Magnetism as Art Showcase, to highlight the beauty of magnetism and magnetic materials. Submissions will be displayed on the virtual Conference website. Four finalists will be selected by a panel of judges and the winner will be determined by popular vote. Finalists will each receive a US$200 prize, and the winner will receive a US$400 prize. The winner will be announced during the Awards Ceremony on Wednesday, 28 April.

Please take a few minutes to look at all of our fantastic submissions online and vote for your favorite!

Magnetism as Art Showcase: Winner from MMM2020

“Magnetic Cherry Blossoms”

Magnetics Society Annual Meeting

Chair: Masahiro Yamaguchi, IEEE Magnetics Society President

**Live Session: Wednesday, 28 April**
- 10:30 pm CST (Asia)
- 4:30 pm CEST (Europe)
- 9:30 am CDT (US)

The Magnetics Society Annual Meeting is open to all Conference attendees. Please join us to learn more about what the IEEE Magnetics Society is doing to support and strengthen the magnetics community, and about the benefits of belonging to the Society. Your suggestions and feedback are most welcome. By joining the IEEE Magnetics Society, you become part of the world’s best-known magnetics organization. In addition to discounts on Conference registrations, you will gain access to local Chapter events and technical activities.

To join today, go to www.ieeemagnetics.org.

**SPECIAL MEMBERSHIP DISCOUNT FOR STUDENTS**

Use the promo code FUTURE50 for 50% off your IEEE Student Membership Due.
Best Student Presentation Award

The IEEE Magnetics Society Best Student Presentation Award recognizes and encourages excellence in graduate studies in the field of magnetism. Finalists will each receive a US$250 prize, and the winner will receive a US$1,000 prize. The winner will be announced during the Awards Ceremony on Wednesday, 28 April.

Conference attendees are encouraged to support these young scientists by viewing their prerecorded talks and submitting questions via the chat boards.

Congratulations to the Intermag 2021 Finalists!

Libor Vojáček (SPINTEC, Central European Institute of Technology)
CF-04. Giant Perpendicular Magnetic Anisotropy Enhancement in MgO-Based Magnetic Tunnel Junction by Using Co/Fe Composite Layer

Jonas Zehner (IFW Dresden, Technische Universität Dresden)
FE-04. Voltage Control of Néel Domain Wall Interactions and Pinning Sites

Pieter Gypens (Ghent University)
GB-13. Nanomagnetic Self-Organizing Logic Gates

Sabpreet Bhatti (Nanyang Technological University)
HB-11. Enhancement of Skyrmion Density achieved via Interface Engineering

Fanfan Meng (University of Cambridge)
JI-05. Non-planar Geometrical Effects on the Magnetoelectrical Signal in a 3D Nanomagnetic Circuit

Best Poster Award

All posters presenters who have submitted an electronic poster along with a prerecorded video summary (up to 90 seconds) will be eligible for nomination for this award. Nominations from each poster session group will be made by the Poster Session Chairs and the winner from each session group will be determined by the Program Co-Chairs. Selections will be based on the level of the research, quality of the poster, and clarity of the presentation. Winners will be announced on Thursday and Friday of the Conference week and will be featured in the GMW Best Poster Award Winners Session Room.

A list of the Best Poster Award Winners from the 2019 Joint MMM-INTERMAG Conference can be found here: https://intermag.org/best-poster-awards
Publications

Authors of accepted digests may submit a manuscript for publication in IEEE Transactions on Magnetics. The editorial process will follow the same high standards as for regular submissions to the journal.

Accepted conference-related papers will be posted online with DOIs as “Early Access” papers. They will be published in final form as regular articles (not as “conference papers”) in a special-topic issue on “Applied Magnetics”. The authors of some manuscripts not accepted for IEEE Transactions on Magnetics will be offered the opportunity to publish in IEEE Magnetics Society Conference Proceedings on IEEE Xplore. There is no cost to the authors for publication unless the authors want open access. Post-deadline manuscripts will not be accepted and not forwarded for review.

IEEE Transactions on Magnetics publishes research in science and technology related to the basic physics and engineering of magnetism, magnetic materials, applied magnetics, magnetic devices, and magnetic data storage. Details of the journal can be found at http://ieeexplore.ieee.org/xpl/aboutJournal.jsp?punumber=20

Conference Organization

IEEE Magnetic Society Advisory Committee (Adcom)

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President-elect – Atsufumi Hirohata
Secretary/Treasurer – Ron Goldfarb
Past President – Pallavi Dhagat

Committee members (term expiring December 31, 2021)
Elke Arenholz, David Jiles, Olga Kazakova, Nicoleta Lupu, Katsuji Nakagawa, Johannes Paulides, Gunter Reiss, Shinji Yuasa

Committee members (term expiring December 31, 2022)
Giovanni Finocchio, Jean Anne Incorvia, Galina Kurlyandskaya, Kenji Nakamura, Hendrik Ohldag, Lucian Prejbeanu, Montserrat Rivas, Yukiko Takahashi

Committee members (term expiring December 31, 2023)
Paolo Bortolotti, Alison Flatau, Mathias Kläui, Nicola Morley, Shigeki Nakagawa, Larissa Panina, S.N. (Prem) Piramanayagam, Laura Steren

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INTERMAG 2021 Program Committee

Future Conferences

15th Joint MMM-INTERMAG Conference
January 10-14, 2022, New Orleans, LA

2022 International Conference on Magnetism (ICM)
July 3-8, 2022, Shanghai, China

67th Annual Conference on Magnetism and Magnetic Materials (MMM)
October 31 – November 4, 2022, Minneapolis, MN

2023 Intermag Conference (INTERMAG)
May 15-19, 2023, Sendai, Japan

68th Annual Conference on Magnetism and Magnetic Materials (MMM)
October 30 – November 3, 2023, Dallas, TX

70th Annual Conference on Magnetism and Magnetic Materials (MMM)
October 27-31, 2025, Palm Beach, FL

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Session TU

Tutorial: Magnetism and the Environment
Johan Paulides, Chair
Advanced Electromagnetics Group, Waalwijk, Netherlands


TU-02. Magnetics of Motor Drive System for Electrical Vehicle. (Invited) K. Fujisaki1 1. Toyota Technological Institute, Nagoya, Japan

TU-03. Rare Earth Magnet Recycling: the Missing Link in a Circular Economy. (Invited) K. Mugerman1 1. Geomega Resources Inc., Montreal, QC, Canada

Session YA

Focus Session: Bench to Bedside Transition of Biomagnetic Research: How Close Are We?
Ravi Hadimani, Chair
Virginia Commonwealth University, Richmond, VA, United States

YA-01. Hard Tissue Magnetic Resonance Imaging With Fast Control of Intense Magnetic Fields. (Invited) J. Algarín1,2, E. Díaz-Caballero1, J. Borreguero1,2, F. Galve1,2, D. Grau-Ruiz1, J. Rigla1, R. Bosch1,2, J. González1, E. Pallás1,2, C. Gramage1,2, A. Rios1, J. Benloch1,2 and J. Alonso1,2 1. Institute for Molecular Imaging and Instrumentation (i3M), Consejo Superior de Investigaciones Cientificas, Madrid, Spain; 2. Institute for Molecular Imaging and Instrumentation (i3M), Universitat Politecnica de Valencia, Valencia, Spain; 3. Tesoro Imaging S.L., Valencia, Spain

YA-02. Nanoviber: Magnetic Nanovibrations for Brain Tumor Therapy: the Translational Road Also Needs Innovation. (Invited) F. Berger1 1. BrainTech Lab U1205 INSERM-UGA, Grenoble, France

YA-03. Imaging and Quantifying Transition Metal Ion Distribution in the Human Brain for Early Detection and Diagnosis of Neurodegenerative Disorders. (Invited) J. Collingwood1 1. School of Engineering, University of Warwick, Coventry, United Kingdom
YA-04. Heating Efficiency of Magnetic Nanoparticles for Magnetic Hyperthermia: Effects of Temperature and Driving-Field Waveform. G. Barrera¹, P. Allia¹ and P. Tiberto¹. ¹. Advanced Materials and Life sciences, Istituto Nazionale di Ricerca Metrologica, Torino, Italy

YA-05. Magnetic Bio-Sensing of Plasma-Derived Extracellular Vesicles for Cancer Screening. A. Moyano¹², E. Serrano-Pertierra², M. Salvador¹³, J.L. Marqués¹, J.C. Martinez-Garcia¹, M.C. Blanco-López² and M. Rivas¹. ¹. Universidad de Oviedo Departamento de Fisica, Gijón, Spain; ². Department of Physical and Analytical Chemistry, University of Oviedo, Oviedo, Spain; ³. Istituto di Struttura della Materia Consiglio Nazionale delle Ricerche, Roma, Italy

YA-06. Potential Effects of TMS Magnetic Fields Beyond the Conventional Neurostimulation. A. Guller¹², S. Clement¹, P. Sowman³ and E. Goldys¹. ¹. ARC Centre of Excellence for Nanoscale BioPhotonics, The Graduate School of Biomedical Engineering, University of New South Wales, Sydney, NSW, Australia; ². The Institute for Regenerative Medicine, Sechenov University (I.M. Sechenov First Moscow State Medical University), Moscow, Russian Federation; ³. Macquarie University, Sydney, NSW, Australia

TUESDAY 4:30 PM EUROPE CEST

LIVE Q&A SESSIONS

Session YB

FOCUS SESSION: MAGNETORHEOLOGICAL COMPOSITE MATERIALS AND APPLICATIONS

Norman Wereley, Chair
University of Maryland, College Park, MD, United States

YB-01. Magnetorheology in Unsteady Triaxial Fields. (Invited) M.B. Terkel¹, J.R. Morillas¹, G. Camacho¹ and J. de Vicente¹. ¹. Applied Physics, Universidad de Granada Facultad de Ciencias, Granada, Spain


YB-03. Controllable Stress of Magnetorheological Fluid Encapsulated Elastomers. (Invited) Y. Choi¹ and N. Wereley¹. ¹. Department of Aerospace Engineering, University of Maryland at College Park, College Park, MD, United States

YB-04. Magnetorheological Elastomers – Material Properties and Actuation Capabilities. H. Böse¹, J. Ehrlich¹ and T. Gerlach¹. ¹. Fraunhofer Institute for Silicate Research ISC, Würzburg, Germany
Study of Liquid Metal Filled Magnetorheological Elastomers. G. Yun1, S. Tang2 and W. Li3 1. School of Mechanical, Materials, Mechatronic and Biomedical Engineering, University of Wollongong, Wollongong, NSW, Australia; 2. Department of Electronic, Electrical and Systems Engineering, University of Birmingham, Birmingham, United Kingdom

Magnetic Particle Reinforced Elastomer Composites for Additive Manufacturing. J. Park1, A. Becnel1, A. Flatau1 and N. Wereley1 1. University of Maryland at College Park, College Park, MD, United States

ON-DEMAND SESSIONS

Session AB

MAGNETIC MICROSCOPY AND IMAGING

Trevor Almeida, Chair
CEA-SPINTEC, Grenoble, France


AB-03. Developing High-Resolution Magnetic Microscopy Applications Using NV Centers in Diamond. (Invited) P. Kehayias. 1. Sandia National Laboratories, Albuquerque, NM, United States


AB-06. Withdrawn


AB-10. Cryogenic Piezoelectric Scanner for Large-Range Microscopy. J.D. Franklin1, B. Xu1 and I. Sochnikov1,2. 1. Physics, University of Connecticut, Storrs, CT, United States; 2. Institute of Material Science, University of Connecticut, Storrs, CT, United States

AB-11. Quantitative Imaging of Antiferromagnetic Spin Cycloidal Textures on Strain Engineered BiFeO3 Thin Films With a Scanning Nitrogen-Vacancy Magnetometer. H. Zhong1, J. Fischer2, A. Haykal3, A. Finco2, A. Stark1, F. Favaro2, P. Maletinsky1, M. Munsch1, K. Bouzehouane2, S. Fusil2, V. Garcia2 and V. Jacques3. 1. Qnami AG, Muttenz, Switzerland; 2. Unité Mixte de Physique, CNRS, Thales, Université Paris Saclay, Palaiseau, France; 3. Laboratoire Charles Coulomb, CNRS, Université de Montpellier, Montpellier, France

ON-DEMAND SESSIONS

Session AC
INSTRUMENTATION AND MEASUREMENT TECHNIQUES
Marcin Sikora, Co-Chair
AGH University of Science and Technology, Krakow, Poland
Jose Mardegan, Co-Chair
DESY, Hamburg, Germany

AC-01. Electromagnetic Non-Destructive Testing of Wire Rope Inside Composite Steel Belts. X. Yan1. 1. University of Harbin Institute of Technology, Shenzhen, Shenzhen, China
AC-02. Anisotropic Magnetoresistance Zero-Field Domain Wall Depinning in Cylindrical Nanowires. J.A. Moreno1 and J. Kosef1,2 1. Materials Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. Electrical Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 3. Sensor Systems Division, Silicon Austria Labs GmbH, Graz, Austria

AC-03. The Application of Unsupervised Learning to the AC Susceptibility Measurements of High-Temperature Superconductors. M. Kowalik1, R. Zalecki2, M. Giebultowski2, J. Niewolski1 and W. Tokarz2 1. Rzeszow University of Technology, Rzeszow, Poland; 2. AGH University of Science and Technology, Krakow, Poland

AC-04. Residual Flux Measurement of Power Transformer Based on Transient Current Difference. Y. Wang1,2, Y. Ren1,2 and C. Liu1,2 1. Hebei University of Technology State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 2. Hebei University of Technology, Tianjin, China


AC-06. System for Testing non-Persistent Switching and Retention Faults of STT-MRAM Arrays. Salimya1, I. Joumard2, G. Zahnd1, B. Blanc1, A. Chavent1, S. Cussac1, R. Sousa2, K. Garello2 and L. Lebrun1 1. Hprobe, Eybens, France; 2. SPINtronique et Technologie des Composants, Grenoble, France

AC-07. Towards a Wideband Induction-Based AC Magnetometer for a Fast Characterization of Magnetic Nanoparticles. M. Saari1,2, M. Sulaiman1, H. Ahmad3, N. Che Lal4 and K. Tsukada5 1. Faculty of Electrical and Electronic Engineering Technology, Universiti Malaysia Pahang, Pekan, Malaysia; 2. Automotive Engineering Centre, Universiti Malaysia Pahang, Pekan, Malaysia; 3. College of Engineering, Universiti Malaysia Pahang, Kuantan, Malaysia; 4. Faculty of Manufacturing and Mechatronic Engineering Technology, Universiti Malaysia Pahang, Pekan, Malaysia; 5. Graduate School of Interdisciplinary Science and Engineering in Health Systems, Okayama University, Okayama, Japan


AC-09. Virtualizing CoFeB/MgO Reconstruction Effects on the STT-PMTJ’s Performance. A. Ramesh1,2, K. Chen1, Y. Lin1, P. Singh1, J. Wei3, Y. Hsin1 and Y. Tseng1 1. National Chiao Tung University, Hsinchu, Taiwan; 2. Indian Institute of Technology Delhi, New Delhi, India; 3. Industrial Technology Research Institute, Hsinchu, Taiwan
AC-10. Analysis of Magneto-Tactic Bacteria Using an Open-Source Optical Density Meter. L. Abelmann1,2, M. Welleweerd2 and T. Hageman2 1. Korea Institute of Science and Technology Europe Forschungsgesellschaft mbH, Saarbrucken, Germany; 2. Universiteit Twente, Enschede, Netherlands

AC-11. Exploring Magnetic Materials by Means of XMCD and XRMR Methods at Beamline P09 at Petra III/DESY. J.R. Mardegan1, O. Leupold3, D. Graulich2, J. Bergholdt1, T. Kuschel2 and S. Francoual1 1. Petra III, Deutsches Elektronen-Synchrotron, Hamburg, Germany; 2. Department of Physics, Bielefeld University, Bielefeld, Germany


AC-13. Magnetic Nanoparticle for Thermal and Magnetic Particle Imaging. T.Q. Bui1, A. Biacchi1, E. Correa1, W. Tew1, A.R. Hight Walker1, C. Dennis3 and S. Woods1 1. National Institute of Standards and Technology, Gaithersburg, MD, United States

AC-14. RIXS-MCD as Selective in-Situ Probe of Structure and Magnetization of Nanoparticles Throughout Synthesis. J. Kuciakowski1, K.T. Pitala1, A. Kmita1, M. Wytrwal-Sarna1, D. Lachowicz1, S. Lafuerza-Bielsa2, D. Koziej1, A. Juhin4 and M. Sikora1 1. AGH University of Science and Technology, Krakow, Poland; 2. ESRF, Grenoble, France; 3. Universitat Hamburg, Hamburg, Germany; 4. Institut de Mineralogie de Physique des Materiaux et de Cosmochimie, Paris, France

AC-15. Withdrawn

AC-16. Space-Varying E-Field Vector Modulation With Oriented Control Using Quintuple Core Coil for TMS. I.C. Carmona5, D. Kumbhare1,2, M. Baron1,3 and R.L. Hadimani5,4 1. Department of Neurosurgery, Virginia Commonwealth University Health System, Richmond, VA, United States; 2. Hunter Holmes McGuire VA Medical Center, Richmond, VA, United States; 3. Southeast Parkinson’s Disease Research, Education and Clinical Center (PADRECC), Hunter Holmes McGuire Veterans Affairs Medical Center, Richmond, VA, United States; 4. Dept. of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 5. Dept. of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States

AC-18. Magnetic Stimulation Reduced Electroencephalography Beta Band Excitability in Insomniacs. H. Yu1, M. Qiao1, S. Ba1, G. Xu1 and L. Guo1 1. Hebei University of Technology, Tianjin, China

ON-DEMAND SESSIONS

Session AD

HYSTERESIS MODELLING

Salvatore Perna, Chair
University of Naples Federico II, Naples, Italy

AD-01. Exploring Effects of Magnetic Nanowire Arrangements and Imperfections on First-Order Reversal Curve Heat-Maps. M. Zamani Kouhpanji1 and B. Stadler1 1. University of Minnesota, Minneapolis, MN, United States

AD-02. A Dynamic Model for the Hysteresis of CoPt Multilayers and its use for the Interpretation of MOKE Hysteresis Loops Aquired at Different Field Ramp Rates. J. Haupt2,1, G. Atcheson1, K. Borisov2,1, N. Teichert1, J. Bespas1, W. Wernsdorfer2 and P.S. Stamenov1 1. School of Physics and CRANN, The University of Dublin Trinity College, Dublin, Ireland; 2. Physikalisches Institut, Karlsruhe Institute of Technology, Karlsruhe, Germany

AD-03. Coarse-Graining in Micromagnetic Simulations of Dynamic Hysteresis Loops. R. Behbahani2,3, M.L. Plumer1 and I. Saika-Voivod1 1. Physics and Physical Oceanography, Memorial University of Newfoundland, St. John’s, NL, Canada; 2. Applied Mathematics, Western University, London, ON, Canada

ON-DEMAND SESSIONS

Session AD
AD-04. Using a Random Forest Regressor to Predict First-Order Reversal Curves of hcp-Co Particle Ensembles. L. Breth¹, T. Schrefl¹, J. Fischbacher¹, A. Kovacs¹, H. Oezelt¹, M. Schwarz², C. Storf², J. Pachlhofer², C. Czettl² and H. Brückl³
¹. Department for Integrated Sensor Systems, Donau-Universitat Krems, Krems, Austria; ². R&D Carbide and Coating, Ceratizit Austria GmbH, Reutte, Austria

AD-05. Two-Dimensional Dynamic Magnetization Model of Steel Sheets Including Vector Hysteresis Effect. R. Zeinali¹, D. Krop¹ and E. Lomonova¹
¹. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands

AD-06. Hysteresis Branch Crossing and the Stoner-Wohlfarth Model. S.A. Mathews¹, A. Ehrlich² and N. Charipar¹
¹. Materials Science and Technology Division, US Naval Research Laboratory, Washington, DC, United States; ². Leidos Inc Arlington, Arlington, VA, United States

AD-07. Estimation of Magnetostrictive Hysteresis Properties of Electrical Steel Sheet Under External Stress Using Multi-Scale Domain Energy Model. M. Li¹, Y. Zhang¹, W. Jiang¹, D. Xie¹ and C. Koh²
¹. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China; ². Cheongju, Chungbuk, Chungbuk National University, Cheongju, The Republic of Korea

AD-08. A 2D Vector Magnetostriiction Model in an Electrical Steel Sheet Taking the Pining Hysteresis Effect Into Account. D. Li¹, Y. Zhang¹, W. Jiang¹, C. Koh² and D. Xie¹
¹. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China; ². College of Electrical and Computer Engineering, Chungbuk National University, Cheongju, The Republic of Korea

AD-09. Optimized Magnetic Hysteresis Management for Electromagnetic Space Discretization Simulation Tool. P. Fagan¹,², B. Ducharne² and A. Skarlatos¹
¹. CEA – DISC, CEA-LIST, CEA Saclay Digiteo Labs, Saclay, France; ². LGEF INSA Lyon, Villeurbanne, France; ³. ELyTMaX UMI 3757, CNRS – Université de Lyon – Tohoku University, International Joint Unit, Tohoku University, Sendai, Japan, Sendai, Japan

AD-10. Ferromagnetic Hysteresis Model Using Fractional Derivative Resolution Developed for the Simulation of Viscoelastic Phenomena. B. Ducharne¹,² and G. Sebald³
¹. ELyTMaX UMI 3757, CNRS – Université de Lyon – Tohoku University, International Joint Unit, Tohoku University, Sendai, Japan, Sendai, Japan; ². LGEF INSA Lyon, Villeurbanne, France
ON-DEMAND SESSIONS

Session AE
MICROMAGNETIC MODELLING
Daria Gusakova, Co-Chair
SPINtronic et Technologie des Composants, Grenoble, France
Joo-Von Kim, Co-Chair
Université Paris-Saclay, Palaiseau, France

AE-01. Dzyaloshinskii Domain Wall Creep. (Invited) V.M. Sokalski1
1. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States

AE-02. Interaction of Chiral Domain Walls With Pinning Disorder in Thin Ferromagnetic Films. V. Jeudy1, P. Géhanne2, S. Rohart1 and A. Thiaville1 1. Laboratoire de Physique des Solides, Orsay, France

AE-03. On Dynamics of Domain Walls With Internal Degrees of Freedom. L. Laurson1 1. Tampereen Yliopisto, Tampere, Finland

AE-04. Micromagnetics of Frustrated States and High-Frequency Modes in Artificial Buckyball Nanostructures. R. Cheenikundil1 and R. Hertel1 1. Institut de Physique et Chimie des Matériaux de Strasbourg, Centre National de la Recherche Scientifique, Strasbourg, France

AE-05. Micromagnetic Modelling of Ferro-, Ferri-, and Antiferromagnetic Materials. L. Sánchez-Tejerina1,2 and V. Puliafito3 1. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, Universita degli Studi di Messina, Messina, Italy; 2. Department of Biomedical, Dental, Morphological and Functional Imaging Sciences, Universita degli Studi di Messina, Messina, Italy; 3. Department of Engineering, Universita degli Studi di Messina, Messina, Italy

AE-06. Micromagnetic Simulations of Artificial Spin ice Lattices and Vertices. L. Connell1,2, K. Esien1 and S. Felton1 1. School of Maths and Physics, Queen’s University Belfast, Belfast, United Kingdom; 2. University of Glasgow, Glasgow, United Kingdom

AE-07. Concentric Target Domains in Magnetic Nanodisks. R. Morel1, S. Ponomareva1, H. Joisten2, S. Philippe1 and B. Dieny1 1. Univ. Grenoble Alpes, CNRS, CEA, Grenoble INP, SPINTEC, 38000, Grenoble, France, Grenoble, France; 2. Univ. Grenoble Alpes, CEA, LETI, 38000 Grenoble, France, Grenoble, France

AE-08. Micromagnetic Study of Stable Skyrmions in Dot-Patterned Graphene-Based Magnetic Trilayers. P. Olleros-Rodríguez1, R. Guerrero1, J. Camarero1,2, O. Chubykalo-Fesenko1 and P. Perna1 1. Fundacion IMDEA Nanociencia, Madrid, Spain; 2. Departamento de Física de la Materia Condensada, Universidad Autonoma de Madrid, Madrid, Spain; 3. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain

10 Monday
AE-09. Néel Type Skyrmions Formation in Nanodots and Antidot Arrays. M.K. Zelent, S. Saha, I. Vetrova, M. Mruczkiewicz and M. Krawczyk. 1. Faculty of Physics, Adam Mickiewicz University in Poznan, Poznan, Poland; 2. Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia; 3. Centre For Advanced Materials Application CEMEA, Slovak Academy of Sciences, Bratislava, Slovakia; 4. Laboratory for Multiscale Materials Experiments, Paul Scherrer Institut, Villigen, Switzerland; 5. Laboratory for Mesoscopic Systems, Department of Materials, ETH Zurich, Zurich, Switzerland

AE-10. Smaller and Faster Skyrmions in Compensated Ferrimagnets and Synthetic Antiferromagnets. S. Rohart, E. Haltz, S. Mallick, L. Berges, A. Mougin and J. Sampaio. 1. Laboratoire de Physique des Solides, Universite Paris-Saclay, Orsay, France

AE-11. Statics and Dynamics of Skyrmions in Synthetic Antiferromagnets: Benefits and Micromagnetic Understanding. E. Haltz, C. Barker and C. Marrows. 1. Physics, University of Leeds School of Physics and Astronomy, Leeds, United Kingdom

AE-12. The Effects of Field History on Magnetic Skyrmion Formation in [Pt/Co/Ir]n Multilayers. A.T. Clark, X. Wang, A. Stuart, W. Jiang, S.G. te Velthuis, A. Hoffmann, K. Buchanan and X. Cheng. 1. Department of Physics, Bryn Mawr College, Bryn Mawr, PA, United States; 2. Department of Physics, Colorado State University, Fort Collins, CO, United States; 3. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 4. Department of Physics, Tsinghua University, Beijing, China; 5. Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States


ON-DEMAND SESSIONS

Session AP
ADVANCES IN (SEMI)-ANALYTICAL AND NUMERICAL TECHNIQUES FOR DESIGN I (Poster Session)
Yacine Amara, Chair
GREAH, University of Le Havre, Le Havre, France

AP-01. A Space-Time Domain Decomposition Method for the Finite Element Analysis of Transient Magnetic Field. Y. Zhang, X. Yang, D. Shao, C. Zhang, H. Wu and W. Fu. 1. School of Mechatronic Engineering and Automation, Shanghai University, Shanghai, China; 2. Hebei University of Technology State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 3. Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong
AP-02. Analytical Computation of Inductance for Spoke-Type Permanent Magnet Synchronous Motor Accounting for Saturation. P. Liang1. Northwestern Polytechnical University, Xi’an, China


AP-05. Magnetic Field Model of Flux Switching Permanent Magnet Machines Considering Harmonic Analysis and Slot Shape. F. Liu1, J. Hu1 and Y. Li1. Harbin Institute of Technology, Harbin, China

AP-06. A General Analytical Expression to Model the air gap Permeance of Electrical Machines. J. Marault1, A. Tounzi1, F. Gillon1 and M. Hecquet1. Univ. Lille, Arts et Metiers Institute of Technology, Centrale Lille, Junia, Lille, France

AP-07. A Mortar Method Based Domain Decomposition Approach for Winding Loss Computation of Electrical Machines. Y. Li1, Y. Feng1, S. Huang1, B. Ma1, G. Wu1 and J. Zhu2. 1. College of Electrical and Information Engineering, Hunan University, Changsha, China; 2. School of Electrical and Information Engineering, University of Sydney, Sydney, NSW, Australia


AP-09. Low Weight Halbach UAM Motor Design Based on Subdomain Analysis. B. Koo1, M. Lee1 and K. Nam1. 1. Pohang University of Science and Technology, Pohang, The Republic of Korea

AP-10. Calculation and Decomposition of Zig-Zag Leakage Flux Losses in a Wet Submersible Induction Machine by the Virtual Permanent Magnet Harmonic Machine Model. J. Yan1, C. Di1 and X. Bao1. 1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China

AP-11. Analytical Modeling for the Flux Reversal Permanent Magnet Machine With Halbach Array Magnets in Rotor Slot. K. Yang1, T. Zhang1, F. Zhao1 and Y. Wang1. Harbin Institute of Technology Shenzhen, Shenzhen, China
AP-12. Analytical Study and Comparison of Electromagnetic Characteristics of 8-Pole 9-Slot and 8-Pole 12-Slot Permanent Magnet Synchronous Machines According to Rotor Eccentricity. H. Lee¹, T. Bang¹, J. Woo³, K. Shin² and J. Choi¹ ¹Chungnam National University, Daejeon, The Republic of Korea; ²Power System Engineering, Chonnam National University, Yeosu, The Republic of Korea

AP-13. Particular Reduced Scalar Potential Formulation for End Winding Magnetic Circuits Modeling Enabling Increased Field Weakening in PM Motors. E.K. Karamanis¹ and A.G. Kladas¹ ¹Electrical and Computer Engineering, National Technical University of Athens, Zografou, Greece

ON-DEMAND SESSIONS

Session AQ
ADVANCES IN (SEMI)-ANALYTICAL AND NUMERICAL TECHNIQUES FOR DESIGN II (Poster Session)
Guillaume Parent, Chair
Université d’Artois, Béthune, France

AQ-01. An Acceleration Method for Reaching Steady-State Performance in Time-Stepping Finite Element Analysis. Y. Li¹, Y. Feng¹, S. Huang¹, B. Ma¹, G. Wu¹ and J. Zhu² ¹College of Electrical and Information Engineering, Hunan University, Changsha, China; ²School of Electrical and Information Engineering, University of Sydney, Sydney, NSW, Australia

AQ-02. An Automatic Local Mesh Refinement Method on Material Interfaces for Enhancing the Solution Accuracy in Electric Field Computation. Y. Zhao¹, S. Cheng¹ and W. Tao¹ ¹Wuhan University, Wuhan, China

AQ-03. A Novel 3D Finite Element Modelling Approach for Calculating Axial Flux Permanent Magnet Machines Based on Scaling Air Gap Method. Y. Bi¹, F. Chai¹ and Y. Pei¹ ¹Harbin Institute of Technology, Harbin, China

AQ-04. Comparison of Electromagnetic Field Distribution Estimated by Three-Channel U-net Neural Network. Y. Chen¹,², Q. Yang³, C. Zhang¹,², Y. Li¹,² and H. Zhang¹,² ¹Hebei University of Technology, Tianjin, China; ²Hebei University of Technology State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; ³Tianjin University of Technology, Tianjin, China

AQ-05. Efficiency Improvement for Submersible Motors by Optimizing the Ratio of Diameter to Shaft Length. J. Li¹, C. Di¹, X. Bao¹, Z. Ke¹ and J. Yan¹ ¹School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China
AQ-06. Electromagnetic Performance Analysis of a Hybrid Excitation Machine Based on Equivalent Magnetic Network. W. Tong¹, P. Wang¹, S. Wu² and S. Li¹ 1. National Engineering Research Center for Rare-Earth Permanent Magnet Machines, Shenyang University of Technology, Shenyang, China; 2. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China


AQ-08. Improved 3D Electromagnetic Analytical Model of an Axial Flux Magnetic Coupling With Rectangular Shaped Permanent Magnets. A. Zerioul¹, L. Hadjout¹, S. Mezani² and Y. Ouazir¹ 1. LSEI-Université des Sciences et Technologie Houari Boumediene (USTHB), Algiers, Algeria; 2. Laboratoire GREEN - FST, Université de Lorraine, Nancy, France


AQ-10. Quickly and High-Precision Digital Twin Device-Level Simulation Modeling of Permanent Magnet Synchronous Generator and Voltage Stabilizing System. R. Sun¹, D. Yang¹, D. Shi², L. Zhuo² and H. Peng¹ 1. National Engineering Research Center for Small and Special Precision Motors, Guizhou Aerospace Linquan Motor Co., Ltd, Guiyang, China; 2. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China

AQ-11. Robust Multi-Objective Optimization Design of Permanent Magnet Motors Based on Objective-Dimension-Reduced Method. L. Quan¹, Y. Lu¹ and J. Wu¹ 1. Jiangsu University, Zhenjiang, China

AQ-12. Robust Optimization Design for PMBL Machine Considering Permanent Magnet Material Uncertainties. J. Wu¹, X. Zhu¹ and D. Fan¹ 1. Jiangsu University, Zhenjiang, China
Session AR
DESIGN OPTIMIZATION OF PERMANENT MAGNET ELECTRICAL MACHINES
(Poster Session)
Metin Aydin, Chair
Kocaeli University, Umuttepe, Izmit, Turkey

AR-01. Topology Optimization of Consequent-Pole PMSM Using on/OFF Method. Z. Sun1,2, K. Watanabe1 and X. Xu2
1. Muroran Institute of Technology, Muroran, Japan; 2. Henan Polytechnic University, Jiaozuo, China

AR-02. Influence of Split Ratio on Field Modulation Effect in Consequent-Pole Permanent Magnet Machine. Y. Li1, H. Yang1 and H. Lin1. 1. Southeast University School of Electrical Engineering, Nanjing, China

AR-03. Design and Optimization of Fractional Slot Concentrated Windings Interior Permanent Magnet Traction Motor Considering Anti-Demagnetization Capability. T. Huynh1, J. Peng1, M. Hsieh1 and P. Huang2. 1. Electrical Engineering, National Cheng Kung University, Tainan, Taiwan; 2. Electrical Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan

AR-04. Optimization of a New Asymmetric-Hybrid-PM Machine With High Torque Density and Low Torque Ripple Considering the Difference of Magnetic Materials. Y. Chen2, T. Cai2, X. Zhu1 and Y. Ding2. 1. Jiangsu University, Zhenjiang, China; 2. Yangzhou University, Yangzhou, China

AR-05. Design and Optimization of New Flux-Concentrating Rotors Combining Halbach PM Array and Spoke-Type IPM for PMSM. J. Wang1, W. Geng1, Q. Li2 and L. Li1. 1. College of Automation Engineering, Nanjing University of Science and Technology, Nanjing, China

AR-06. Multi-Objective Tradeoff Designs of Rotor Flux-Barrier in a Multi-Layered IPM Machines for EV Applications. Z. Chen1. 1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

AR-07. Robust Design Optimization Based on Separated Surrogate Model Method for IPMSM. C. Kim1, S. Jun1 and S. Jung1. 1. Department of Electrical and Computer Engineering, Sungkyunkwan University College of Information and Communication Engineering, Suwon, The Republic of Korea

AR-08. Tornado Optimization With Pattern Search Method for Optimal Design of IPMSM. C. Wi1 and D. Lim1. 1. University of Ulsan, Ulsan, The Republic of Korea


AR-11. Withdrawn


AR-13. Design and Analysis of a Low Torque Ripple Inset-Permanent-Magnet Motor Considering Multi-Harmonic Injection. Y. Xu¹, L. Quan² and W. Pu¹ 1. Jiangsu University, Zhenjiang, China


AR-17. Research on Flux Regulating Characteristics of Built-in Permanent Magnet Motor IPM Synchronous Motor for Multiple Operating Conditions. W. Wu¹, Y. Sun¹, Q. Chen¹ and L. Gao¹ 1. School of Automotive Engineering, Changsu Institute of Technology, Changshu, China

AR-18. Research on Polar Anisotropic Molding Yoke Shape to Reduce Dead Zone of Ring Type Bond Magnets. J. Min¹, D. Nam¹ and W. Kim¹ 1. Electrical Engineering, Gachon University, Seongnam, The Republic of Korea
Session AS
ELECTRIC DRIVE APPLICATIONS, TRANSFORMERS AND WIRELESS POWER TRANSFER II
(Poster Session)
Kyung-Hun Shin, Chair
Chonnam National University, Yeosu, The Republic of Korea

AS-01. The Electric Vehicle Wireless Charging Application Oriented Coupler Robust Optimization Design With Multiple Series Unipolar Coils. L. Li1, Z. Wang1, Z. Feng1, J. Deng1, S. Wang1 and D.G. Dorrell1. 1. Faculty of Mechanical Engineering, Beijing Institute of Technology, Beijing, China; 2. The University of Witwatersrand, South Africa, Johannesburg, South Africa

AS-02. Decoupled-Double D Coils Based Dual-Resonating-Frequency Compensation for Wireless Power Transfer. H. Pang1, K. Chau1, W. Han1, W. Liu1 and Z. Zhang2. 1. University of Hong Kong, Hong Kong; 2. Tianjin University, Tianjin, China; 3. University of Toronto, Toronto, ON, Canada

AS-03. Design, Manufacture, and Test of a Contactless Power Transfer Device for Rotating System. Y. Zhang1, J. Yang1, D. Jiang1, D. Li1 and R. Qu1. 1. Huazhong University of Science and Technology, Wuhan, China

AS-04. Active Shielding Coil Design for Wireless Charging System of Electric Vehicle. M. Mi1, Y. Li1, Q. Yang1, P. Zhang1 and W. Zhang1. 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China


AS-06. Modeless Prediction of Variable Coupling Effect for Multiple-Pickup Wireless Power Transfer. S. Shen1, Z. Zhang1 and Y. Wu1. 1. Tianjin University, Tianjin, China

AS-07. Brushless DC Motor Driver and Control System Based on Simultaneous Wireless Information and Power Transfer. Y. Li1, H. Zhang1, J. Wu1, J. Yin1, M. Wang1 and J. Zhang1. 1. Zhengzhou University of Light Industry, Zhengzhou, China


AS-09. Thermal Network Model of a SCB2500kVA Dry-Type Transformer Coupled With Electromagnetic Loss. Y. Chen1, Q. Yang1, C. Zhang1, Y. Li1 and X. Li1. 1. Hebei University of Technology, Tianjin, China; 2. Hebei University of Technology State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 3. Tianjin University of Technology, Tianjin, China
Fourier-Based Semi-Analytical Method for Current Distribution of Foil Wound Solid-State Transformers.
S. Pourkeivannour, M. Curti and E. Lomonova. 1. Electrical Engineering, Technische Universiteit Eindhoven Faculteit Industrial Engineering and Innovation Sciences, Eindhoven, Netherlands

Study of Vibration and Noise Considering DC Bias in Power Transformer. Z. Xin, D. Chen, H. Yao, B. Bai and D. Fang. 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China; 2. Tieling Power Supply Company, State Grid Liaoning Electric Power Supply Co Ltd, Shenyang, China

Study on Vibration and Noise Characteristics of Nanocrystalline High-Frequency Transformer. P. Zhang, L. Li, Y. Jia and L. Li. 1. School of Mechanical Electronic and Information Engineering, China University of Mining and Technology (Beijing), Beijing, China; 2. North China power control sub-center of State Grid, Beijing, China; 3. State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources (North China Electric Power University), Beijing, China

Study of Electromagnetic Characteristics of Silicon Steel Sheet and Transformer Vibration Under Different Tension/Compression Stress. H. Yao, D. Chen and B. Bai. 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China

Study of Magnetic Properties of Ultra-Thin Silicon Steel Sheet and Medium Frequency Transformer. X. Cao, D. Chen, Y. Wang, S. Zhang and B. Bai. 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China

Study of Loss and Temperature Considering Different Shielding Structure in Power Transformer. B. Bai, X. Cui and D. Chen. 1. Shenyang University of Technology, Shenyang, China; 2. Shenyang Institute of Engineering, Shenyang, China

Research on Structure Loss Separation of Power Transformer. X. Cui, D. Chen and B. Bai. 1. Shenyang University of Technology, Shenyang, China; 2. Shenyang Institute of Engineering, Shenyang, China
Session AT
MAGNETIC BEARINGS AND MAGNETIC LEVITATION
(Poster Session)
Somporn Ruangsinchaiwanich, Chair
Naresuan University, Thailand, Phitsanuloke, Thailand

AT-01. New Levitation Scheme With Traveling Magnetic Electromagnetic Halbach for EDS MAGLEV System. W. Qin¹. Electrical Engineering, Beijing Jiaotong University, Beijing, China

AT-02. Levitation Force and Lateral Force Analysis of a Large-Load Magnetic Levitation Gravity Compensator With Two-Dimensional Permanent Magnet Array. H. Zhang¹, L. Zhou¹, B. Kou¹ and Y. Liu¹. Harbin Institute of Technology, Harbin, China

AT-03. Modeling and Finite Element Analysis on the Novel Double-Stator Hybrid Magnetic Bearing. X. Ye¹, Z. Wang¹, T. Zhang¹ and Q. Lu¹. Huaiyin Institute of Technology, Huaian, China

AT-04. Electromagnetic Analysis of a Novel Axial-Radial Four-Pole DC Hybrid Magnetic Bearing. S. Wu¹, Z. Wang¹ and T. Zhang¹. Huaiyin Institute of Technology, Huaian, China

AT-05. Development of a 120W Bearingless Maglev Motor for Centrifugal Pumps. C. Wang¹, S. Nain¹, S. Liou¹ and G. Chen¹. Industrial Technology Research Institute, Hsinchu, Taiwan

AT-06. Design of the HTS Magnetic Bearing Rotor Incorporated the Secondary of the Induction Motor. M. Minamitani¹, S. Takimura¹ and S. Ohashi¹. Kansai University, Suita, Japan

AT-07. A Suspension Performance Comparison of the Bearingless Axial Motor With Different Number of the Rotor Poles and Stator Slots. T. Pei¹, D. Li¹, J. Liu¹, W. Kong¹ and R. Qu¹. Huazhong University of Science and Technology State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Wuhan, China

AT-08. Electromagnetic Analysis of a Novel AC Six-Pole Hybrid Magnetic Bearing. T. Zhang¹, Z. Zhou¹ and Z. Ding¹. Huaiyin Institute of Technology, Huaian, China

Monday
AU-01. Magnetoelectric Inductor Tuned by Electric and Magnetic Fields. D.V. Savelev1, L.Y. Fetisov1, D.V. Chashin1 and Y.K. Fetisov1 1. MIREA - Russian Technological University, Moscow, Russian Federation

AU-02. High Efficiency Eddy Current Couplings. S.J. Alshammari1, P. Lazari1 and K. Atallah1 1. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom

AU-03. Compact Wireless Motor Drive Using Decoupled Bipolar Coils for Coordinated Operation of Robotic Arms. W. Han1, K. Chau2, Z. Hua2 and H. Pang2 1. Department of Electrical and Computer Engineering, University of Toronto, Toronto, ON, Canada; 2. Department of Electrical and Electronics Engineering, The University of Hong Kong, Hong Kong


AU-06. Closed-Form Electromagnetic Field Coupling to Transmission Line Model Exploiting the Reciprocity Theorem. T. Liang1 and Y. Xie1 1. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China

AU-07. Design and Experimental Verification of DC Superconducting Current-Limiting Switch. Z. Cai1, I. Ren1, X. Tan1, H. Zheng1, Z. Li1 and Y. Tang1 1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, China


AU-09. Analysis and Calculation of Magneto-Thermal-Structure Coupling of Double-Skewed Induction Motor Based on Multiphysics Field. G. Chen1, X. Bao1, C. Di1, W. Xu1, R. Zhu1 and J. Li1 1. Hefei University of Technology, Hefei, China
AU-10. Prediction of Iron Loss With Combined Nonlinear and Linear Finite Element Analysis Considering Current Harmonics by PWM. X. Gu1, J. Ryu1, J. Chin1 and M. Lim1
1. Automotive Engineering, Hanyang University, Seoul, The Republic of Korea

AU-11. Magnetic-Thermal Coupling Analysis of Anode Saturable Reactor. Y. Chen1,2, Q. Yang1, C. Zhang1,2, Y. Li1,2 and J. Wang1,2 1. Hebei University of Technology, Tianjin, China; 2. Hebei University of Technology State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 3. Tianjin University of Technology, Tianjin, China

AU-12. Influence of Uneven Axial Temperature Distribution on Axial Unbalanced Magnetic Force in PM Machines With Different Rotor Skew Types. Y. Du1, L. Wu1 and H. Wen1
1. College of Electrical Engineering, Zhejiang University, Hangzhou, China

AU-13. Withdrawn

AU-14. Research on Electromagnetic Control of Robot Arm Using Smart Motor Combined With Internet of Things. C. Hsu1
1. Mechanical Engineering, Oriental Institute of Technology, Panchiao, Taiwan

ON-DEMAND SESSIONS

Session AV
VIBRATION ANALYSIS AND ENERGY HARVESTING APPLICATIONS
(Poster Session)
Daniele Davino, Chair
Università degli Studi del Sannio Dipartimento di Ingegneria, Benevento, Italy

AV-01. Dependence of the Vibration Energy and Frequency on the Charging Characteristics and the Damping Characteristics of the Linear Synchronous Generator. T. Azuma1, T. Maruyama1 and S. Ohashi1 1. Electrical and Electronic Engineering, Kansai University, Suita, Japan


AV-03. Vibration Reduction of IPMSM With Asymmetric Rotor Shape Under Certain Load Condition. S. Woo1, J. Kim1, J. Park1, S. Park1 and M. Lim1 1. Automotive Engineering, Hanyang University, Seongdong-gu, The Republic of Korea

Monday 21
, C. Zhao¹, J. Zheng² and R. Yan¹ 1. Hebei University of Technology, Tianjin, China

AV-05. Research on Performance of Magnetic Fluid Triboelectric Nanogenerator. X. Yang¹, Y. Chen², Y. Zhang¹ and W. Yang² 1. Hebei University of Science and Technology, Shijiazhuang, China; 2. Hebei University of Technology, Tianjin, China

TUESDAY

9:00 AM EUROPE CEST

TUESDAY LIVE Q&A SESSIONS

Session BA

ELECTRICAL MACHINES AND DRIVES 2020 AND BEYOND

Amr Adly, Chair
Cairo University, Giza, Egypt


BA-02. Integration of Electrical Machine and Drive. (Invited)
J.J. Paulides¹ and L. Encica¹ 1. R&D, AE-Group www.ae-grp.nl, Waalwijk, Netherlands

BA-03. HTS Machines. (Invited) S. Mezani¹, B. Dolisy¹, L. Belgueuras¹, T. Lubin¹, J. Lévêque¹ and A. Rezzoug¹ 1. Groupe de Recherche en Energie Electrique de nancy, Universite de Lorraine, Nancy, France


BA-05. Novel Asymmetric Rotor Pole Interior Permanent Magnet Machines With Enhanced Torque Density: An Overview. (Invited) Z. Zhu¹ and Y. Xiao¹ 1. The University of Sheffield, Sheffield, United Kingdom

BA-06. Hybrid Excited Synchronous Machines. (Invited) S. Hlioui¹, M. Gabsi², H. Ben Ahmed³, G. Barakat¹ and Y. Amara⁴ 1. SATIE Laboratory, Conservatoire National des Arts et Metiers, Paris, France; 2. SATIE Laboratory, Ecole Normale Superieure Paris-Saclay, Gif-Sur-Yvettes, France; 3. SATIE Laboratory, Ecole Normale Superieure de Rennes, Bruz, France; 4. GREAH Laboratory, Universite du Havre, Le Havre, France
ON-DEMAND SESSIONS

Session BB
DUAL WINDING AND PERMANENT MAGNET MEMORY MACHINES
Jonathan Bird, Co-Chair
Portland State University, Portland, OR, United States
Johan Paulides, Co-Chair
Advanced Electromagnetics Group, Waalwijk, Netherlands

BB-01. Split Ratio Investigation of Double Stator Permanent Magnet Motor Considering Multimode Operation. D. Fan¹, Z. Xiang¹ and X. Zhu¹ 1. Jiangsu University, Zhenjiang, China

BB-02. Analytical Modelling, Optimization and Electromagnetic Performance Analysis of Electrically Excited Flux Switching Motor, B. Khan¹, F. Khan¹, W. Ullah¹, E. Sulaiman² and B. Ullah¹ 1. Electrical & Computer Engineering, COMSATS University Islamabad, Abbottabad, Pakistan; 2. Department of Electrical Power Engineering, Universiti Tun Hussein Onn Johore, Johore, Malaysia

BB-03. A Novel Stator Cooling Construction for Yokeless and Segmented Armature Axial Flux Machine With Heat Pipe. W. Le¹, M. Lin¹, L. Jia¹ and S. Wang¹ 1. Southeast University, Nanjing, China

BB-04. Research on an Asymmetric-Primary Axis-Flux Hybrid-Excitation Generator for the Vertical Axis Wind Turbine. J. Liu¹, Q. Zhang¹ and J. Chen¹ 1. China University of Petroleum Huadong, Qingdao, China


BB-06. Fault-Tolerant Control for a Six-Phase Two-Controllable-Rotor Motor. H. Suzuki¹, K. Hirata¹, N. Niguchi¹ and K. Takahara¹ 1. Graduate School of Engineering, Osaka University, Suita, Japan

BB-07. Ultra High-Field, High-Efficiency Superconducting Machines for Offshore Wind Turbines. T. Balachandran¹, D. Lee¹, A. Yoon¹ and K. Haran¹ 1. Hinetics LLC, Champaign, IL, United States


Monday 23
Investigation of a Novel Consequent-Pole Variable Flux Memory Machine With Reduced Magnetization Current.
H. Yang, R. Tu and H. Lin. 1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. The Hong Kong Polytechnic University, Kowloon, Hong Kong

Design and Analysis of a Novel Series-Parallel Variable Flux Machine With Segmented Hybrid Permanent Magnets.
M. Wang, P. Zheng, C. Tong, G. Qiao and F. Liu. 1. School of Electrical Engineering & Automation, Harbin Institute of Technology, Harbin, China; 2. State Key Laboratory of Robotics and System, Harbin Institute of Technology, Harbin, China

ON-DEMAND SESSIONS

Session BC
HIGH-SPEED MACHINES AND RELUCTANCE MACHINES
Jian-Xin Shen, Chair
Zhejiang University, Hangzhou, China


Analytical Analysis of the Eccentricity Effect in Slotted Ultra-High Speed Axial Flux Permanent Machines. G. Cao, W. Cheng, Z. Deng, L. Xiao and M. Li. 1. College of Science, Xi’an University of Science and Technology, Xi’an, China

Design and Optimization of a Slotless High-Speed Permanent-Magnet Synchronous Motor With Non-Magnetic Fillers in Stator. Y. Wan, L. Zhu, Y. Jia, N. Meng, J. Guo and X. Jiang. 1. School of Automation, Nanjing University of Science and Technology, Nanjing, China; 2. Aviation Key Laboratory of Science and Technology on Aero Electromechanical system integration, AVIC Nanjing Engineering Institute of Aircraft System, Nanjing, China

Experimental Study on Remanence Variation of Permanent Magnets for High-Speed Machines. J. Shen, H. Cao, Y. Zhang and Y. Wang. 1. College of Electrical Engineering, Zhejiang University, Hangzhou, China; 2. Zhejiang Provincial Key Laboratory of Electrical Machine Systems, Hangzhou, China

BC-06. Impact of Rotor Eccentricity and Current Harmonics on High-Speed Permanent Magnet Generator Performance for Microturbine Applications. T. Huynh¹ and M. Hsieh¹
1. Electrical Engineering, National Cheng Kung University, Tainan, Taiwan

ON-DEMAND SESSIONS

Session BD
LINEAR MACHINES, ELECTROMAGNETIC ACTUATORS AND APPLICATIONS
David Bowen, Chair
University of Maryland, College Park, MD, United States

BD-01. Analysis of Magnetic Gearing Effect in Field-Modulated Hybrid Excitation Transverse Flux Linear Generator for Direct Drive Wave Energy Conversion. M. Chen¹, L. Huang¹, Y. Li¹, P. Tan¹, G. Ahmad¹, Y. Liu¹ and M. Hu¹ 1. School of Electrical Engineering, Southeast University, Nanjing, China

BD-02. Design and Analysis of a Three-Degree-of-Freedom Linear Oscillatory Actuator Integrated With Support Mechanism. R. Nakamura¹, A. Heya² and K. Hirata¹ 1. Division of Materials and Manufacturing Science, Osaka University, Suita, Japan; 2. Department of adaptive machine systems, Osaka University, Suita, Japan

BD-03. Eddy Current Analysis and Optimization Design of Linear Induction Motors With Different Secondary Topologies Based on XGBoost. S. Wu¹ and Q. Lu¹ 1. College of Electrical Engineering, Zhejiang University, Hangzhou, China

BD-04. An Ironless Planar Translational Permanent Magnet Generator for sea-Wave Energy Conversion. M. Trapanese¹, D. Curto¹ and V. Franzitta¹ 1. Dipartimento di Ingegneria, Università di Palermo, Palermo, Italy

BD-05. Optimization of the Excitation Method of the Propulsion Coils in the Permanent Magnet-HTS Hybrid Magnetically Levitated Conveyance System. S. Ohashi¹ 1. Electrical and Electric Engineering, Kansai University, Suita, Japan

BD-06. Reduction of Rotational Vibration Using Coriolis Force Generated by Electromagnetic Oscillatory Actuator Moving in Radial Direction. M. Kato¹ and F. Kitayama¹ 1. Ibaraki University, Hitachi, Japan

BD-07. Design and Experimental Analysis of Novel Hybrid Excited Linear Flux Switching Machine With Unequal Primary Tooth Width and Segmented Secondary. N. Ullah¹,², F. Khan¹ and A. Basit² 1. Department of Electrical and Computer Engineering, COMSATS University Islamabad, (Abbottabad Campus), Abbottabad, Pakistan; 2. Department of Electrical Energy System Engineering, University of Engineering and Technology, Peshawar, Pakistan
BD-08. Numerical Analysis of Magnetic Soliton Excited on Nonlinear LC Ladder Circuit Array Using Permanent Magnet Flux Biased Inductor. M. Kato1, S. Lee2 and K. Hirata2 1. Ibaraki University, Mito, Japan; 2. Osaka University, Suita, Japan

BD-09. Proposal of Novel Multiple-Degree-of-Freedom Voice Coil Actuator. A. Heya1 and K. Hirata2 1. Department of Adaptive Machine Systems, Osaka University, Suita, Japan; 2. Division of Materials and Manufacturing Science, Osaka University, Suita, Japan

BD-10. Core Loss Reduction of Tubular Flux-Switching Permanent Magnet Machine With Hybrid Magnetic Core. S. Wang1,2, Y. Wang1,2, C. Liu1,2, G. Lei1, Y. Guo1 and J. Zhu1 1. Hebei University of Technology, Tianjin, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 3. University of Technology Sydney, Sydney, NSW, Australia; 4. School of Electrical and Information Engineering, University of Sydney, Sydney, NSW, Australia

BD-11. Translator Eccentricity Analysis in Tubular Linear Machines Using Quasi-3D Finite Element Method Modeling. H. Diab1, Y. Amara1, G. Barakat1 and M. Ghandour2 1. GREAH, Universite du Havre, Le Havre, France; 2. Universite Libanaise Faculte de Genie, Beirut, Lebanon

ON-DEMAND SESSIONS

Session BE

MAGNETIC BEARINGS AND MOTOR MATERIAL MODELLING

Jonathan Bird, Co-Chair
Portland State University, Portland, OR, United States
Wei Qin, Co-Chair
Beijing Jiaotong University, Beijing, China

BE-01. Parameter Identification of Preisach Model Based on the Conjugate Gradient Method and Velocity-Controlled Particle Swarm Optimization. L. Chen1,2, Q. Yi1,3, T. Ben1,2, Z. Zhang1,3 and Y. Wang1 1. College of Electrical Engineering and New Energy, China Three Gorges University, Yichang, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment Hebei University of Technology, Hebei University of Technology, Tianjin, China; 3. Hubei Provincial Engineering Technology Research Center for Power Transmission Line, China Three Gorges University, Yichang, China

BE-02. Design of Innovative Radial Flux Permanent Magnet Motor Alternatives With Non-Oriented and Grain-Oriented Electrical Steel for Servo Applications. B. Ozdincer1 and M. Aydin1 1. Mechatronics Engr., Kocaeli Universitesi, Kocaeli, Turkey; 2. Akim Metal Sanayi ve Ticaret A S, Istanbul, Turkey
BE-03. Additively Manufactured Fe-3Si Stator for High-Performance Electrical Motor. T. Lamichhane1,
C. Chinnasamy2, F. List1, K. Carver1, B. Andrews1 and P.M. Paranthaman1. 1. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 2. Carpenter Technology Corporation, Philadelphia, PA, United States


BE-05. A Novel Hybrid Axial Magnetic Bearing That Produces a Unidirectional Electromagnetic Force. C. Yu1, Z. Deng1, L. Mei2, C. Peng1 and S. Chen1. 1. College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China; 2. College of Electrical Engineering and Control Science, Nanjing Tech University, Nanjing, China

BE-06. Design of a Stiffness Control Actuator Utilizing Magneto-Elastic Actuation. L. Cheng1 and J. Chang1. 1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan


ON-DEMAND SESSIONS

Session BF
MAGNETIC GEARING
Kais Atallah, Chair
University of Sheffield, Sheffield, United Kingdom

BF-01. Design of Bridged Flux Modulators in Coaxial Magnetic Gear Considering Mechanical Stress. Y. Zhan1, K. Wang1, Z. Ying1, G. Xu1 and H. Zhao1. 1. School of Electrical and Electronic Engineering, North China Electric Power University, Beijing, China

BF-02. Influence of Magnetic Interaction on Power Factor and Efficiency of IPM-Type Magnetic-Geared Motor. K. Ito1 and K. Nakamura1. 1. Graduate School of Engineering, Tohoku University, Sendai, Japan

BF-03. Pseudo Direct Drive Electrical Machine for a Floating Marine Current Turbine. R. Dragan1, R. Barrett1, S.D. Calverley1, J. Moreu1 and K. Atallah2. 1. Magnomatics Ltd, Sheffield, United Kingdom; 2. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom; 3. Seaplace, Madrid, Spain
BF-04. Magnetically Geared Propulsion Motor for Subsea Remote Operated Vehicle. G. Cooke¹, R. Barrett¹, R. Dragan¹, D. Powell¹, S. Graham² and K. Atallah² ¹. Magnomatics Ltd, Sheffield, United Kingdom; ². Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom; ³. Soil Machine Dynamics Ltd, Wallsend, United Kingdom

BF-05. Optimization Algorithms for Performance Calculation of Rotating Cylinder Planetary Gear. Y. Zhan¹, Z. Zhang¹, X. Yuan¹, H. Zhao¹ and G. Xu¹ ¹. School of Electrical and Electronic Engineering, North China Electric Power University, Beijing, China

BF-06. Analytical Modeling of an Axial Flux Magnetic-Geared Double-Rotor Machine With Interior-Modulating-Rotor. J. Lang¹, C. Tong¹, J. Bai¹, P. Zheng¹ and J. Liu¹ ¹. Electrical Engineering, Harbin Institute of Technology, Harbin, China

BF-07. Optimization Design of Performance and its Cost of a Novel Magnetic Lead Screw by Combination of Different Permanent Magnet Materials. Y. Liu¹, H. Yu¹, Y. Wang¹, Q. Zhang¹ and M. Chen¹ ¹. College of Electrical Engineering, Southeast University, Nanjing, China

BF-08. Dinamyc Magnetic Gear: Different Topologies and Magnetization and Demagnetization Assessment. K. Marques de Andrade Júnior¹, C.G. da Costa Neves¹, A.F. Flores Filho¹ and G. Teixeira de Paula¹ ¹. Universidade Federal de Goias Escola de Engenharia Eletrica Mecanica e de Computacao, Goiania, Brazil; ². Universidade Federal de Pelotas, Pelotas, Brazil; ³. Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil

BF-09. Analysis of Magnetic Coupling Between Armature and Field Windings of Variable Flux Reluctance Machine. H. Gurleyen¹ ¹. Usak Universitesi, Usak, Turkey

BF-10. Investigating the Performance Potential of High Gear Ratio Coaxial Magnetic Gears. H. Wong¹ and J. Bird¹ ¹. Maseeh College of Engineering and Computer Science, Portland State University, Portland, OR, United States

BF-11. Design and Analysis of Dual-Stator Flux-Switching Permanent Magnet Machine-Compressor With Asymmetric Rotor Poles. B. Li¹, J. Zha¹, C. Liu¹ and Y. Li¹ ¹. Hebei University of Technology, Tianjin, China; ². The University of Sydney, Sydney, NSW, Australia

BF-12. A Transversely-Dislocated Brushless Double-Rotor Machine Based on Magnetic-Field Modulation for Contra-Rotating Propeller. Y. Wang¹, Y. Sui¹, J. Liu¹, G. Liu¹, P. Zheng¹ and L. Sun¹ ¹. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China

BF-13. Design, Build and Test of a Magnetically Geared Generator for Wind Turbine Applications. (Invited) S.D. Calverley¹, R. Dragan¹, G. Cooke¹ and D. Powell¹ ¹. Magnomatics Ltd, Sheffield, United Kingdom
ON-DEMAND SESSIONS

Session BG

SURFACE MOUNTED AND INTERIOR MOUNTED PERMANENT MAGNET ELECTRICAL MACHINES
Thierry Lubin, Chair
Lorraine University, Nancy, France

BG-01. Flooded Permanent Magnet Direct-Drive Generator for Tidal Turbines. (Invited) F. Wani¹ and H. Polinder¹
1. Maritime & Transport Technology, Technische Universiteit Delft, Delft, Netherlands

BG-02. Electromagnetic Performance Analysis of a New Hybrid Excitation Synchronous Generator With Decoupling Magnetic Field. C. Wang¹, Z. Zhang¹, Y. Liu¹, X. Kong¹,² and Y. Hua¹ 1. College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China; 2. Jiangsu Province Key Laboratory of Aerospace Power System, Nanjing, China

BG-03. Design of a Novel Axial-Radial Flux Permanent Magnet Machine With Halbach-Array Permanent Magnets. R. Huang¹,², C. Liu¹,², Z. Song¹,² and H. Zhao¹,² 1. School of Energy and Environment, City University of Hong Kong, Hong Kong SAR, China; 2. Shenzhen Research Institute, City University of Hong Kong, Shenzhen, China


BG-05. Design Optimization for Torque Ripple Reduction Using Asymmetric Rotor in IPMSM Considering Forward and Reverse Directions. J. Park¹, J. Kim¹, S. Park¹, S. Lee¹, K. Kim¹ and M. Lim¹ 1. Department of Automotive Engineering, Hanyang University, Seongdong-gu, The Republic of Korea

BG-06. A Novel Hybrid Excited Machine With H-Type Modular Stator and Consequent Pole PM Rotor. W. Ullah¹, F. Khan¹, E. Sulaiman², B. Khan¹ and M. Umair¹ 1. Electrical and Computer Engineering, COMSATS Institute of Information Technology - Abbottabad Campus, Abbottabad, Pakistan; 2. Electrical Power, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Malaysia


BG-09. Comparative Analysis of Axial-Radial, Axial, and Radial Flux Permanent Magnet Machines. R. Huang¹,², C. Liu¹,², Z. Song¹,² and H. Zhao¹,² ¹. School of Energy and Environment, City University of Hong Kong, Hong Kong SAR, China; ². Shenzhen Research Institute, City University of Hong Kong, Shenzhen, China

BG-10. Design and Optimization of a Novel Low-Cost Hybrid-Pole Rotor for Spoke-Type Permanent Magnet Machine. J. Han¹, Z. Zhang¹, C. Wang¹ and J. Huang¹ ¹. College of Automation, Nanjing University of Aeronautics and Astronautics, Nanjing, China

BG-11. A New IPMSM With Hybrid Rotor Structure for Electrical Vehicle With Reduced Magnet Loss. W. Cui¹, L. Ren¹, J. Zhou¹ and Q. Zhang¹ ¹. Shanghai University, School of Mechatronic Engineering and Automation, Shanghai University, Shanghai, China

BG-12. A Novel Two-Step Flux Linkage Identification for PMSMs Considering Magnetic Saturation and Spatial Harmonics. Y. Zuo¹, S. Afrasiabi¹ and C. Lai¹ ¹. Electrical and Computer Engineering, Concordia University, Montreal, QC, Canada

BG-13. Design of a New Consequent-Pole Segmented Dual-Stator Permanent Magnet Machine. G. Qu¹ and Y. Fan¹ ¹. School of Electrical Engineering, Southeast University, Nanjing, China

BG-14. Optimization of Pole Segmentation Technique Applied to Permanent Magnet Synchronous Machines to Reduce the Cogging Torque Peak. H. Emerenciano Santos¹, K. Marques de Andrade Júnior¹, A.F. Flores Filho², C.G. da Costa Neves³ and G. Teixeira de Paula² ¹. EMC, Universidade Federal de Goias Escola de Engenharia Eletrica Mecanica e de Computacao, Goiania, Brazil; ². Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; ³. Universidade Federal de Pelotas, Pelotas, Brazil

BG-15. Sinusoidal, Trapezoidal and Harmonic Injection PWM Techniques Applied to the Pole Segmentation of Permanent Magnet Synchronous Machine to Reduce the Torque Ripple. K. Marques de Andrade Júnior¹, A.F. Flores Filho², C.G. da Costa Neves³ and G. Teixeira de Paula² ¹. EMC, Universidade Federal de Goias Escola de Engenharia Eletrica Mecanica e de Computacao, Goiania, Brazil; ². Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; ³. Universidade Federal de Pelotas, Pelotas, Brazil
BH-01. Convolutional Neural Networks for Inverse Design of Magnetic Structures. S. Pollok¹, R. Bjerk¹ and P.S. Jørgensen¹  
¹. Department of Energy Conversion and Storage, Danmarks Tekniske Universitet, 2800 Kgs. Lyngby, Denmark

¹. Electrical Machines and Apparatus Technologies (EMAT), Nanjing, China

BH-03. Multicriteria Optimal Latin Hypercube Design-Based Surrogate-Assisted Design Optimization for a Permanent-Magnet Vernier Machine. Y. Ma¹, Y. Xiao², J. Wang³, L. Zhou¹ and Z. Zhu²  
¹. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China; ². Department of Electronics and Electrical Engineering, The University of Sheffield, Sheffield, United Kingdom

BH-04. Nonlinear Multi-Scale Model Order Reduction of Eddy-Current Problem. H. Eskandari¹, J. Gyselinck² and T. Matsuo¹  
¹. Kyoto University, Kyoto, Japan; ². Universite Libre de Bruxelles, Bruxelles, Belgium

BH-05. Parametric Geometric Metamodel of Nonlinear Magnetostatic Problem Based on POD and RBF Approaches. A. Boumesbah¹, T. Henneron¹ and S. Clénet¹  
¹. Univ. Lille, Arts et Metiers Institute of Technology, Centrale Lille, Yncrea Hauts-de-France, ULR 2697 - L2EP, F-59000 Lille, France

BH-06. A New Permanent Magnet Biased Eddy Current Brake With Both AC and DC Windings for Low Speed Applications. M. Gulec¹ and M. Aydin¹  
¹. Kocaeli Universitesi, Kocaeli, Turkey

¹. Graduate School of Engineering, The University of Tokyo, Bunkyo-ku, Japan

¹. School of Electrical Engineering, Southeast University, Nanjing, China

BH-10. Influence of Rotor Pole Number on Electromagnetic Performance of Novel Asymmetric-Stator-Pole Flux Reversal PM Machine. C. Qian¹, H. Yang¹ and H. Lin¹  
¹. Southeast University, Nanjing, China

Session BH  
ADVANCES IN (SEMI)-ANALYTICAL AND NUMERICAL TECHNIQUES FOR DESIGN, AND INNOVATIVE DESIGNS  
Pierre-Daniel Pfister, Chair  
Zhejiang University, Hangzhou, China

ON-DEMAND SESSIONS

Session BI
ADVANCES IN (SEMI)-ANALYTICAL AND NUMERICAL TECHNIQUES FOR MODELING
Shuangxia Niu, Chair
The Hong Kong Polytechnic University, Kowloon, Hong Kong

BI-01. Core Losses and AC Winding Losses in Finite-Element and Lumped-Parameter Analysis of PMSMs – Pragmatism Versus Number Crunching. (Invited) J. Gyselinck1 and R. Sabariego2 1. BEAMS, Universite Libre de Bruxelles, Bruxelles, Belgium; 2. ELECTA, Katholieke Universiteit Leuven, Leuven, Belgium

BI-02. Reluctance Network Model of Switched Reluctance Motor Considering Magnetic Hysteresis Behavior. Y. Hane1, K. Mitsuya1 and K. Nakamura1 1. Graduate School of Engineering, Tohoku University, Sendai, Japan

BI-03. Dynamic Hysteresis Modeling Considering Skin Effect for Magnetic Circuit Analysis. Y. Hane1 and K. Nakamura1 1. Graduate School of Engineering, Tohoku University, Sendai, Japan


BI-05. Analytical Calculation for Magnetic Field in Spoke-Type Permanent Magnet Machines Based on a Rotor Magnetic Potential Model. S. Wu2, H. Wang3, L. Guo3, Z. Wang3, Z. Song3 and T. Shi1 1. Zhejiang University, Hangzhou, China; 2. Tianjin University, Tianjin, China; 3. Tiangong University, Tianjin, China

BI-06. A Surrogate Model Assisted With a Subdomain Model for Permanent-Magnet Machine. C. Tang1, P. Pfister1 and Y. Fang1 1. Zhejiang University, Hangzhou, China

BI-07. Lagrange Based Model for Non-Linear Airgap Analytical Optimization in a Transverse Flux Motor, With Reference to an Electric Bicycle. B. Mukherjee1, J. Vannier1 and F. Bernot2 1. Energie, CentraleSupelec, Gif-sur-Yvette, France; 2. FranceCol Technology, Tours, France

BI-08. 3-D Analytical Modeling and Optimization of Axial Flux Coreless PM Motor. W. Qin1, F. Wang1 and J. Zhao1 1. Electrical Engineering, Beijing Jiaotong University, Beijing, China

32 Monday
BI-09. Analytical Analysis and Optimization of Cogging Torque in Spoke-Type PM in-Wheel Motor Considering Rotor Slot Opening. Y. Hua1, Z. Zhang1, C. Wang1 and X. Kong1,2
1. Nanjing University of Aeronautics and Astronautics, Nanjing, China; 2. Jiangsu Province Key Laboratory of Aerospace Power System, Nanjing, China

BI-10. Genetic Algorithm Optimal Design of SMPMSM Using Analytical Subdomain Model. S.A. Mohd Shafri1, T. Tian1, D. Ishak2, J. Leong1, C. Tan1, H. Ong3 and M. Ahmad1
1. Faculty of Electrical Engineering Technology, Universiti Malaysia Perlis, Arau, Malaysia; 2. Universiti Sains Malaysia, Minden, Malaysia; 3. Wawasan Open University, Penang, Malaysia; 4. Universiti Malaysia Perlis, Arau, Malaysia

ON-DEMAND SESSIONS

Session BJ
ELECTRIC DRIVE APPLICATIONS, TRANSFORMERS AND WIRELESS POWER TRANSFER I
ChaoQiang Jiang, Chair
University of Cambridge, Cambridge, United Kingdom

BJ-01. New Core Loss Model for Ferrite Cores Based on a Meta-Material Approach. T. Dimier1 and J. Biela1
1. HPE / D-ITET, ETH Zurich, Zurich, Switzerland

1. The Laboratory for Physical Sciences, College Park, MD, United States; 2. Electrical and Computer Engineering, The University of Maryland College Park, College Park, MD, United States

BJ-03. Prediction of Cylindrical Magnetic Shielding Performance by Considering the Magnetic Field Strength Inside the Material. M. Sakakibara1, G. Uehara1 and Y. Adachi1
1. Kanazawa Institute of Technology, Kanazawa, Japan

BJ-04. A Novel Output Voltage Regulation Method for Three-Phase Three-Level Wireless Power Transfer Based on a Simplified System Model. Y. Liu1,2, C. Liu1,2, X. Gao1,2 and Y. Xiao1,2
1. School of Energy and Environment, City University of Hong Kong, Hong Kong SAR, China; 2. Shenzhen Research Institute, City University of Hong Kong, Shenzhen, China

BJ-05. Analysis of Highly Reliable Electric Drive System Based on Dual-Winding Fault-Tolerant Permanent Magnet Motor. X. Jiang1, D. Wu1, L. Li1 and Y. Li1
1. Nanjing University of Science and Technology, Nanjing, China

BJ-06. Iron Loss Calculation Based on Loss Surface Hysteresis Model and Its Verification. W. Li1, Y. Sun1, X. Fan1 and Q. Wu1
1. College of Electronic and Information Engineering, Tongji University, Shanghai, China

BJ-08. Experimental Study of a Hybrid Bonding in Ferromagnetic Stacks for Electrical Machine Applications. A. Giraud1, M. Nomdedeu1 and B. Nogarede1 1. NOVATEM, Toulouse, France

BJ-09. Magnetic Hysteresis: a Reliable Technique for Condition Monitoring of Magnetic Cores. H. Hamzehbahmani1 1. Engineering, Durham University, Durham, United Kingdom

BJ-10. Additive Manufacturing for Soft Magnetic Materials. V. Martin1, F. Gillon1, D. Najjar2, A. Benabou1, J. Witz2, M. Hecquet1 and P. Quaegebeur1 1. Univ. Lille, Arts et Metiers Institute of Technology, Centrale Lille, Junia, ULR 2697 - L2EP, Lille, France; 2. Univ. Lille, CNRS, Centrale Lille, UMR 9013 - LaMcube - Laboratoire de Mécanique, Multiphysique, Multiechelle, Lille, France

BJ-12. Coupled Electromagnetic and Thermal Analysis of Permanent Magnet Rectifier Generator Based on LPTN. H. Wang1, Y. Jiang1, D. Wang1 and J. Chen1 1. The Key Laboratory of Science and Technology on Vessel Integrated Power System, Naval University of Engineering, Wuhan, China

BJ-13. Investigation of Balanced Bidirectional-Magnetization Effect of a Novel Hybrid-Magnet-Circuit Variable Flux Memory Machine. R. Tu1, H. Yang1-2, H. Lin1, Z. Zhu1, S. Niu2 and S. Lyu1 1. Southeast University, Nanjing, China; 2. The Hong Kong Polytechnic University, Kowloon, Hong Kong; 3. The University of Sheffield, Sheffield, United Kingdom


ON-DEMAND SESSIONS

Session BK
VIBRATION ANALYSIS AND ENERGY HARVESTING APPLICATIONS
Mauro Zucca, Chair
INRIM, Torino, Italy

BK-01. Vibration Analysis of the Multi-Unit Permanent Magnet Synchronous Machine in the non-Mechanical-Load Indirect-Testing Situation. D. Zeng1, J. Zou2, Y. Xu2 and Q. Wei1 1. Harbin Engineering University, Harbin, China; 2. Harbin Institute of Technology, Harbin, China
A New Method to Control Intrinsic Localized Mode Using a Variable Magnetic Spring Structure. S. Lee1, M. Kato2 and K. Hirata1 1. Division of Materials and Manufacturing Science, Osaka University, Suita, Japan; 2. Electrical and Electronics Systems, Ibaraki University, Mito, Japan

Design Study of a Two-Dimensional Electromagnetic Vibration Energy Harvester. C. Imbaquingo1, C.R. Bahl1, A.R. Insinga1 and R. Bjørk1 1. Energy Conversion and Storage, Danmarks Tekniske Universitet, Lyngby, Denmark

Spin-Orbit Torque Rectifier for Energy Harvesting From Weak Radio-Frequency. S. Sayed1, S. Salahuddin1 and E. Yablonovitch1 1. Electrical Engineering and Computer Sciences, University of California Berkeley, Berkeley, CA, United States


ON-DEMAND SESSIONS

Session BP
PERMANENT MAGNET ELECTRICAL MACHINES FOR ELECTRIC VEHICLE (Poster Session)
Rong-Jie Wang, Chair
Stellenbosch University, Stellenbosch, South Africa

BP-01. Research on the Influence of Harmonics Back-EMFs on the Flux-Weakening Performance of IPMSM. L. C1, J. Hu1, K. Li1 and J. Shang1 1. Harbin Institute of Technology, Harbin, China

BP-02. Design of Hybrid-Type PM Motor for Electric Vehicle Traction Using Trapezoidal Ferrite-PM to Improve Reluctance Torque. J. Park1, R. Tsumata1, M. Takemoto2, K. Orikawa1 and S. Ogasawara1 1. Hokkaido University, Sapporo, Japan; 2. Okayama University, Okayama, Japan

BP-03. Design, Modelling, and Analysis of a Novel Series-Parallel-Connected Hybrid-PM Variable-Flux PMSM. G. Qiao1, P. Zheng1, M. Wang1, F. Liu1 and Y. Liu1 1. Harbin Institute of Technology, Harbin, China

1. Harbin Institute of Technology, Harbin, China

BP-06. Maximum Torque per Ampere Control for Variable-Flux PMSMs Considering the Influence of Magnetization State Adjustments and Load Condition Variations. G. Qiao1, P. Zheng1, M. Wang1, F. Liu1 and Y. Liu1
1. Harbin Institute of Technology, Harbin, China

1. Vinh University of Technology Education, Nghean, Vietnam; 2. Electrical Engineering, National Cheng Kung University, Tainan, Taiwan

1. Jiangsu University, Zhenjiang, China

BP-09. Influence of MMF Space Harmonic on PM Eddy-Current Losses in a Modular Fault-Tolerant in-Wheel Motor Under Open-Circuit Faulty Operations. Y. Tang1, F. Chai1, Y. Yu1 and T. Chen1
1. Electrical Engineering, Harbin Institute of Technology, Harbin, China

BP-10. Comparative Study of Field Modulation Effects on Consequent-Pole PM Machines With Different Stator Slot Configurations. Y. Li1, H. Yang1 and H. Lin1
1. Southeast University, School of Electrical Engineering, Nanjing, China


BP-12. Design Methodologies for Variable-Flux Machines for Fully Utilizing the Material Properties of the Magnet. F. Liu1, P. Zheng1, M. Wang1, G. Qiao1 and S. Zhang1
1. School of Electrical Engineering & Automation, Harbin Institute of Technology, Harbin, China

BP-13. Current Map Refinement of Interior Permanent Magnet Synchronous Motor Using the Magnetic Flux Map Obtained by Experiment. J. Jung1, S. Chai1, J. Park1 and B. Lee2

BP-14. Torque-Speed Characteristics Evaluation for Permanent Magnet Synchronous Motors With Rectangular Conductors. C. Huang1,2, D. Meng1 and Y. Gong2
1. Tongji University, Shanghai, China; 2. Schaeffler Group, Anting, Shanghai, China
BP-15. Performance Analysis of a PMASynRM Machine for Light Electric Vehicle. V. Manescu Paltanea\textsuperscript{1}, G. Paltanea\textsuperscript{1}, I. Hantila\textsuperscript{1}, M. Maricaru\textsuperscript{1}, P. Minciunescu\textsuperscript{2}, B. Varaticeanu\textsuperscript{2}, L. Demeter\textsuperscript{2} and M. Pesteri\textsuperscript{2}. \textit{1. Electrical Engineering, Universitatea Politehnica din Bucuresti, Bucuresti, Romania; 2. Servomotor Division, ICPE S.A., Bucharest, Romania}

BP-16. Torque Analysis of High Power Density Permanent Magnet Synchronous Machines by Considering Core Reluctance. C. Li\textsuperscript{1}, J. Gao\textsuperscript{1}, W. Zhang\textsuperscript{2}, W. Zhou\textsuperscript{1} and S. Huang\textsuperscript{1}. \textit{1. College of Electrical and Information Engineering, Hunan University, Changsha, China; 2. Department of Electronic and Electrical Engineering, Changsha University, Changsha, China}

BP-17. Optimized Rotor Shape for Reducing Torque Ripple and Electromagnetic Noise. H. Ge\textsuperscript{1}, X. Qiu\textsuperscript{1}, B. Guo\textsuperscript{1} and H. Wang\textsuperscript{1}. \textit{1. Nanjing Normal University School of Electrical and Automation Engineering, Nanjing, China}

ON-DEMAND SESSIONS

Session BQ
HIGH-SPEED MACHINES AND ENERGY STORAGE MACHINES (Poster Session)
Chang-Hung Hsu, Co-Chair
Oriental Institute of Technology, New Taipei City, Taiwan
Christopher H. T. Lee, Co-Chair
Nanyang Technological University, Singapore, Singapore

BQ-01. Kriging Surrogate Model-Based Design of Ultra-High-Speed Surface-Mounted Permanent Magnet Synchronous Motor Considering Stator Iron Loss and Rotor Eddy Current Loss. S. Im\textsuperscript{1}, S. Lee\textsuperscript{1}, D. Kim\textsuperscript{1}, X. Gu\textsuperscript{1}, S. Shin\textsuperscript{1} and M. Lim\textsuperscript{1}
\textit{1. Automotive Engineering, Hanyang University, Seongdong-gu, The Republic of Korea}

BQ-02. Torque Comparison Between Slotless and Slotted Ultra-High Speed AFPM Motors. W. Cheng\textsuperscript{1}, G. Cao\textsuperscript{1}, Z. Deng\textsuperscript{1}, L. Xiao\textsuperscript{1} and M. Li\textsuperscript{1}
\textit{1. College of Science, Xi’an University of Science and Technology, Xi’an, China}

BQ-03. Reduction of Torque Ripple and Rotor Eddy Current Losses by Closed Slots Design in a High-Speed PMSM for EHA Applications. Y. Hu\textsuperscript{1}
\textit{1. Nanjing Engineering Institute of Aircraft Systems, Nanjing, China}

BQ-04. Optimization of a High-Speed PMSM Based on the Quantum Evolutionary Bat Algorithm and Deep Neural Network. X. Liu\textsuperscript{1} and B. Yuan\textsuperscript{2}
\textit{1. Chongqing Normal University, Chongqing, China; 2. Chongqing University, Chongqing, China}


BQ-08. A Novel High-Speed Dual-Stator Flux Switching Permanent Magnet Machine. W. Yu, K. Liu, W. Hua, M. Hu, Z. Zhang and J. Hu. 1. Southeast University, Nanjing, China


BQ-14. Structure and Control of Modular Frequency-Multiplying Inverter With Low-Carrier-Ratio for High Speed Machine. J. Yin1, W. Kong1, J. Wu1, Q. Zhang1, J. Zhang1 and G. Han2
1. Zhengzhou University of Light Industry, Zhengzhou, China; 2. Xidian University, Xian, China


BQ-16. Investigation of a Novel Homopolar Inductor Machine With Flux Memory for the Flywheel Energy Storage System. J. Yang1, S. Huang1 and C. Ye2 1. Hunan University, Changsha, China; 2. Huazhong University of Science and Technology, Wuhan, China

ON-DEMAND SESSIONS
Session BR
SURFACE MOUNTED AND INTERIOR MOUNTED PERMANENT MAGNET ELECTRICAL MACHINES (Poster Session)
Small Mezani, Chair
Université de Lorraine, Vandoeuvre lès Nancy CEDEX, France

BR-01. Novel Dual-Stator Single Rotor Consequent Pole PM Machine. J. Yang1, S. Huang1 and C. Ye2 1. Hunan University, Changsha, China; 2. Huazhong University of Science and Technology, Wuhan, China

BR-02. Comparative Studies of Winding Short-Circuit Currents of Six-Phase PMSMs With Different Armature Magnetomotive Force Distributions. L. Cheng1, Y. Sui1, P. Zheng1, Z. Yin1 and S. Yang1 1. Harbin Institute of Technology, Harbin, China

BR-03. Cogging Torque Dynamic Reduction Based on Regional Magnetic Compensation. J. Gao1, Z. Xiang1, S. Huang1 and L. Dai1 1. Hunan University, Changsha, China


BR-05. Comparison of Short Circuit and Irreversible Demagnetization Between Different Winding Connections in Surface-Mounted PM Machines. Y. Du1, L. Wu1 and H. Zhan1 1. College of Electrical Engineering, Zhejiang University, Hangzhou, China


BR-08. Segmented Asymmetrical Stator Structure of PMSM to Reduce Torque Ripple. C. Liu, J. Zou, Y. Xu, G. Yu and L. Zhuo 1. Harbin Institute of Technology, Harbin, China


A Study on Improving the Power Density of Slotless Motor Applying 3D Printing Technology. Y. Park1, S. Oh1, H. Kim1, S. Kim2 and J. Lee1 1. Electrical Engineering, Hanyang University, Seongdong-gu, The Republic of Korea; 2. Electrical Engineering, Yuhang University, Bucheon, The Republic of Korea


A Study on Electrical Power Steering Motor’s 2-Stage Skew Shape Design to Reduce Cogging Torque and Torque Ripple. D. Shin1, S. Lee1, S. Song1, K. Kim1 and W. Kim1 1. Electrical Engineering, Gachon University, Seongnam, The Republic of Korea

A Study on Core Skew for Performance Improvement of Double-Layer Spoke Type PMSM. D. Nam1, K. Lee2, H. Pyo1, M. Jeong1 and W. Kim1 1. Electrical Engineering, Gachon University, Seongnam, The Republic of Korea; 2. Hyundai Kia Motors Namyang Institute, Hwaseong, The Republic of Korea


Design and Optimization of a Novel Dynamic Relieving-DC-Saturation Transverse Variable Flux Tubular Linear Memory Machine. Z. Li1, X. Zhang2, S. Niu1 and W. Fu1 1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen In-Drive Amperex Co. Ltd, Shenzhen, China

BS-05. A Novel Magnetic Actuator System for Appearance Inspection of Complex Iron Structures. H. Yaguchi1 and Y. Itoh1 1. Tohoku Gakuin University, Tagajo, Japan

BS-06. Force Control of a Bilateral Linear Permanent Magnet Switched Reluctance Motor. Y. Zou1 1. Research Centre, Goal Technology (Shenzhen) Limited Company, Shenzhen, China


BS-08. Design and Analysis of a High Thrust Linear Voice Coil Motor Using for the Stiffness Test of Linear Motor Servo System. H. Zhang1, B. Kou1, Q. Ge1 and Y. Liu1 1. Harbin Institute of Technology, Harbin, China

BS-09. Study on the Optimal Shape and Installation Position of the Damper Coils at the Low Velocity Range in Electrodynamic Suspension System. R. Yamamoto1, R. Betsunoh1 and S. Ohashi1 1. Department of Electrical and Electronic Engineering, Kansai University, Suita, Japan


BS-11. Design of a Slim-Width Linear Vibration Motor Used for Automotive LCD Display Panel. Z. Jiang1, K. Park1 and S. Hwang1 1. Mechanical engineering, Pusan National University, Busan, The Republic of Korea

BS-12. Novel Dual Coil Microspeaker With Reduced Back Volume. K. Park1, Z. Jiang1 and S. Hwang1 1. Mechanical engineering, Pusan National University, Busan, The Republic of Korea


Monday
BS-14. Development of Linear Oscillatory Actuator With 4 Poles and 8 Poles Movers. F. Kitayama¹ and R. Kondo¹ I. Ibaraki University, Mito, Japan

BS-15. Analysis of Magneto-Mechanical Coupled Effect on Electromagnetic Propulsion. Y. Yang¹, P. Liu¹ and Q. Yin² 1. Nanjing University of Science and Technology, Nanjing, China; 2. Southwest Institute of Technical Physics, Chengdu, China

ON-DEMAND SESSIONS

Session BT

VERNIER AND FLUX MODULATED MACHINES
(Poster Session)

Xiao Chen, Chair
The University of Sheffield, Sheffield, United Kingdom

BT-01. A Design Method of Multi-MMF Halbach PM Array and its Application in Flux Reversal Machines. H. Huang¹, D. Li¹, X. Ren¹ and R. Qu¹ 1. Huazhong University of Science and Technology State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Wuhan, China

BT-02. Investigation of a Dual-Winding Dual-Flux-Concentrated Magnetic-Field Modulated Brushless Compound-Structure Machine. G. Liu¹, P. Zheng¹, J. Bai¹, J. Liu¹ and Y. Wang¹ 1. School of Electrical Engineering & Automation, Harbin Institute of Technology, Harbin, China; 2. State Key Laboratory of Robotics and System, Harbin Institute of Technology, Harbin, China

BT-03. Design and Analysis of a New Partitioned Stator Hybrid-Excited Flux Reversal Machine With Dual-PM. Y. Meng¹, S. Fang¹, X. Pan¹ and L. Qin¹ 1. School of Electrical Engineering, Southeast University, Nanjing, China

BT-04. Investigation of Consequent-Pole Flux-Switching Permanent Magnet Machines With Magnets in Stator Slot Opening. C. Chen¹, D. Li¹ and R. Qu¹ 1. Huazhong University of Science and Technology, Wuhan, China

BT-05. Quantitative Identification of Airgap Flux Density Harmonics Contributing to Back-EMF in Dual-Permanent-Magnet-Excited Machine. Y. Shi¹, L. Jian² and T. Ching¹ 1. Department of Electromechanical Engineering, University of Macau Faculty of Science and Technology, Taipa, China; 2. Southern University of Science and Technology Department of Electrical and Electronic Engineering, Shenzhen, China

BT-06. Design of a Axial-Modular Flux-Switching Permanent Magnet Machine. Y. Wang¹, P. Su¹, Y. Shen¹ and Y. Li¹ 1. Hebei University of Technology School of Electrical Engineering, Tianjin, China

Monday 43
BT-07. A Novel Winding Switching Strategy of a Consequent-Pole Ferrite-PM Hybrid-Excited Machine for Electric Vehicle Application. J. Jiang1, X. Zhang2 and S. Niu1 1. Electrical engineering department, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen In Drive Amperex Co. Ltd., Shenzhen, China

BT-08. Analysis of Axial Modular Flux Reversal Permanent Magnet Machine. Y. Shen1, P. Su1, Y. Wang1 and Y. Li1 1. Hebei University of Technology School of Electrical Engineering, Tianjin, China

BT-09. A Novel Brushless Dual-Electrical-Port Dual-Mechanical-Port Machine With Opening Stator Slot. Z. Liang1, X. Ren1, D. Li1 and R. Qu1 J. Huazhong University of Science and Technology, Wuhan, China

BT-10. Flux-Modulated DC-Saturation-Relieving Hybrid Reluctance Machine Using Zero-Sequence Current Excitation for Electric Vehicle Application. J. Jiang1, X. Zhao1, S. Niu1 and K. Wong2 1. Electrical engineering department, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Division of Science, Engineering and Health Studies, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

BT-11. Comparative Study of Winding Configuration on a Multi-Tooth Flux Switching Permanent Magnet Machine. Z. Li1, G. Zhao1, W. Hua1, X. Jiang1 and P. Su1 1. School of Electrical and Automation Engineering, Nanjing Normal University, Nanjing, China; 2. Southeast University, Nanjing, China

BT-12. Development of Slot-PM-Assisted Reluctance Generator With Self-Excited DC Source for Stand-Alone Wind Power Generation. J. Jiang1, X. Zhao1, S. Niu1 and K. Wong2 1. Electrical engineering department, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Division of Science, Engineering and Health Studies, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

BT-13. A Novel Relieving-DC-Saturation Hybrid-Excited Machine With Skewed Permanent Magnets for Electric Vehicle Application. S. Wang1, S. Niu1, X. Zhao1 and K. Wong2 1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Division of Science, Engineering and Health Studies, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

BT-14. Influence of DC/AC Winding Split Ratio on Electromagnetic Performance of Hybrid Reluctance Machine With Synthetic Slot PM Excitation. S. Wang1, X. Zhao1, S. Niu1 and K. Wong2 1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Division of Science, Engineering and Health Studies, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

BT-15. Electromagnetic Performance Analysis and Comparison of Fractional-Slot Non-Overlapping Winding Dual-Rotor Axial Flux Permanent Magnet Vernier Machines With Segmented Stators. L. Jia1, M. Lin1 and W. Le1 1. School of Electrical Engineering, Southeast University, Nanjing, China
Investigation on Electromagnetic Torque of a Flux-Switching Permanent Magnet Motor From Perspective of Flux Density Harmonic Deterioration Rate. Y. Pu1, Z. Xiang1, M. Jiang1 and X. Zhu1. 1. Jiangsu University, Zhenjiang, China

ON-DEMAND SESSIONS

Session BU

MAGNETIC GEARS AND VERNIER MACHINES

(Poster Session)

Siavash Pakdelian, Chair
University of Massachusetts Lowell, Lowell, MA, United States

BU-01. A High Torque Density Magnetic-Geared Dual-PM Split-Tooth Vernier Machine With Halbach Consequent Poles. H. Huang1, D. Li1 and R. Qu1. 1. Huazhong University of Science and Technology State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Wuhan, China

BU-02. Design of an Axial-Type Magnetic Gear With an Auxiliary Flux-Enhancing Structure. H. Zhao1,2, C. Liu1,2, Z. Song1,2 and R. Huang1,2. 1,2. SEE, City University of Hong Kong, Kowloon, Hong Kong; 2. Shenzhen Research Institute, City University of Hong Kong, Shenzhen, China

BU-03. Design and Analysis of an Effective Fault-Tolerant Dual-Winding Axial-Flux Magnetic-Geared Machine for in-Wheel Electric Vehicle. Y. Chen1, W. Fu1, S. Ho1 and S. Niu1. 1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong

BU-04. Design and Comparison Study of a Yokeless Magnetic Gear With Trapezoidal Halbach PM Array for Electric Vehicle Driving. Y. Chen1, W. Fu1, S. Ho1 and S. Niu1. 1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong

BU-05. Design and Analysis of a Novel Active Magnetic Gear for Low-Speed Large-Torque Applications. Y. Chen1, W. Fu1, S. Ho1 and S. Niu1. 1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong

BU-06. Design and Analysis of a Ferrite-Assisted Hybrid Reluctance Machine for Electric Vehicle Propulsion. W. Wang1, X. Zhao1 and S. Niu1. 1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong

BU-07. Design and Implementation of New Axial-Radial Bevel Magnetic Gear Based on Magnetic 3D Printing. P. Huang1, H. Huang1, I. Jiang1, T. Chang1 and M. Tsai1,2. 1. Electrical Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan; 2. Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan

BU-09. Topology Optimization of the Reluctance Trans-Rotary Magnetic Gear. R. Saffarpour1 and S. Pakdelian1 1. Electrical and Computer Engineering, University of Massachusetts Lowell, Lowell, MA, United States

BU-10. Hybrid Excitation Dual Stator/Rotor Armature Winding Vernier Machine With Alternate Stator PM. S. Jia1, S. Feng1, D. Liang1 and X. Dong1 1. Xi’an Jiaotong University, Xi’an, China

BU-11. A Novel Permanent Magnet Generator With Dual-Electric and Dual-Mechanical Port for Stand-Alone AC/DC Power Supply System. Q. Lin1, S. Niu1, X. Zha1, F. Cai2 and W. Fu1 1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong; 2. Xiamen Tungsten Co Ltd, Xiamen, China

BU-12. Analysis of Split-Tooth Stator-Slot Permanent-Magnet Machines With Different PM Arrangements. L. Cao1, K. Chau1, C. Lee2 and T. Yang1 1. University of Hong Kong, Hong Kong; 2. Nanyang Technological University, Singapore, Singapore


BU-15. Design and Analysis of Novel Split-Pole Fault-Tolerant Vernier Permanent Magnetic Machine. B. Xu1, Q. Wu1, J. Ma1, X. Liu1, L. Wu1, L. Qiu1, J. Zhang1 and Y. Fang1 1. Zhejiang University, Hangzhou, China

BU-16. Analysis of a Novel Dual-PM Vernier Machine With High Torque Density and Low Torque Ripple and Unbalanced Force. J. Huang1, W. Fu1 and S. Niu1 1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

BU-17. Analysis of 12 Slots Novel DC-Biased Dual-PM Vernier Machines With Slot-Opening PMs. J. Huang1, W. Fu1 and S. Niu1 1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

BU-18. A Novel Approach for Power Factor Improvement in Dual-Stator Vernier Permanent Magnet Machines. Q. Lin1, S. Niu1, X. Zha1, F. Cai2 and W. Fu1 1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong; 2. Xiamen Tungsten Co Ltd, Xiamen, China
Comparative Study of Novel Dual Stator Machines Having Different Biased PM Configurations. X. Zhang, H. Yang, and S. Niu. 1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong; 2. Southeast University, Nanjing, China; 3. Shenzhen In Drive Amperex Co. Ltd., Shenzhen, China

ON-DEMAND SESSIONS

Session BV
WOUND ROTOR, AXIAL FLUX AND MEMORY MOTORS
(Poster Session)
Mi-Ching Tsai, Co-Chair
National Cheng Kung University, Tainan, Taiwan
Jen-Yuan (James) Chang, Co-Chair
National Tsing Hua University, Hsinchu, Taiwan

BV-01. Analysis of Inter-Turn Short-Circuit Faults of Axial Split Phase Permanent Magnet Synchronous Motors. F. Chai and L. Geng. 1. Harbin Institute of Technology, Harbin, China


BV-04. Electromagnetic Analysis and Efficiency Improvement of Axial-Flux Permanent Magnet Motor With Yokeless Stator by Using Grain-Oriented Silicon Steel Material. J. Hou, W. Geng, Q. Li, and Z. Zhang. 1. College of Automation Engineering, Nanjing University of Science and Technology, Nanjing, China; 2. College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China


BV-06. A Novel Wound Field Switched Flux Machine With Zero-Sequence Field Current Excitation. X. Zhang, H. Yang, and S. Niu. 1. Electrical Engineering, Southeast University, Nanjing, China; 2. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong; 3. Shenzhen In Drive Amperex Co. Ltd., Shenzhen, China

BV-08. Research on Optimal Design of Commutation Performance of Starter-Generator Used in Aero-Engine. R. Sun1, H. Peng1, G. Huang1, D. Shi1 and L. Zhuo1,2 1. National Engineering Research Center for Small and Special Precision Motors, Guizhou Aerospace Linquan Motor Co., Ltd, Guiyang, China; 2. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China


BV-10. A Novel Asymmetric-PM Variable Flux Memory Machine With Anti-Demagnetization Barrier Design. W. Liu1, H. Yang1 and H. Lin1 1. Southeast University, Nanjing, China

ON-DEMAND SESSIONS

Session BW
DESIGN AND CONTROL OF RELUCTANCE MACHINES AND INDUCTION MACHINES
(Poster Session)
Duc-Kien Ngo, Co-Chair
Vinh University of Technology Education, Vinh, Vietnam
Po-Wei Huang, Co-Chair
National Cheng Kung University, Tainan City, Taiwan

BW-01. Withdrawn

BW-02. Torque Ripple Optimization for Synchronous Reluctance Motors Based on a Virtual Permanent Magnet Harmonic Machine. Y. Xu1, C. Di1, X. Bao1 and D. Xu1 1. Hefei University of Technology, Hefei, China

BW-03. Multi-Physic Fields Surrogate-Assisted Optimization of a Permanent Magnet Assisted Synchronous Reluctance Motor. K. Shuai1, J. Wang1, Z. Ling2, C. Cheng2, J. Zheng2, L. Zhou1 and Y. Ma1 1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, China; 2. State Grid Hubei Electric Power Research Institute, Wuhan, China
1. Mehran University of Engineering and Technology, Jamshoro, Pakistan; 2. Sukkur IBA University, Sukkur, Pakistan; 3. Chung-Ang University, Seoul, The Republic of Korea

BW-05. Research on Sliding Mode DITC Based on Gray Wolf Optimization Algorithm for SRM. L. Feng1, X. Sun1 and J. Zhu2 1. Jiangsu University, Zhenjiang, China; 2. University of Sydney, Sydney, NSW, Australia

BW-06. Multiphysics and Two-Step Multi-Fidelity Optimization for a Switched Reluctance Motor. B. Wan1, X. Sun1 and J. Zhu2 1. Jiangsu University, Zhenjiang, China; 2. University of Sydney, Sydney, NSW, Australia


BW-08. Unified Control for Switched Reluctance Motors for Electric Vehicles. X. Tang1, X. Sun1 and J. Zhu2 1. Jiangsu University, Zhenjiang, China; 2. University of Sydney, Sydney, NSW, Australia

BW-09. Development of a Dual-Ferrite-Assisted DC-Saturation-Relieving Hybrid Reluctance Machine for Electric Propulsion. W. Wang1, X. Zhao1 and S. Niu1 1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong

BW-10. Optimization of Stator Construction for Weight Reduction of Axial-Field Dual-Rotor Segmented Switched Reluctance Machine. W. Sun1, Q. Li1, L. Sun1, Y. Wan1 and X. Jiang1 1. Department of Electrical Engineering, School of Automation, Nanjing University of Science and Technology, Nanjing, China

BW-11. Design and Optimization of Starting Capability of a Line-Start Synchronous Reluctance Motor. Y. Hu1,2, B. Chen1,2, Y. Xiao2, J. Shi3, X. Li3 and L. Li3 1. State Key Laboratory of Air-conditioning Equipment and System Energy Conservation, Zhuhai, China; 2. Gree Electric Appliances, Inc., Zhuhai, China; 3. Harbin Institute of Technology, Harbin, China


BW-14. A Wireless Three-Phase Switched Reluctance Motor Using Single Receiver. H. Wang1, K. Chau1, C. Lee2, X. Tian1 and T. Yang1 1. Electrical and Electronic Engineering, University of Hong Kong, Hong Kong; 2. Electrical and Electronic Engineering, Nanyang Technological University, Singapore, Singapore


BW-16. A Primary-Controlled Wireless Single-Phase Induction Motor Using Secondary Self-Drive Half-Bridge Inverter. H. Wang1, K. Chau1, C. Lee2, X. Tian1 and T. Yang1 1. Electrical and Electronic Engineering, University of Hong Kong, Hong Kong; 2. Electrical and Electronic Engineering, Nanyang Technological University, Singapore, Singapore

BW-17. Influence of Driving Mode on Loss of Doubly Salient Brushless DC Motor With Rectangular Wire Winding. J. Zhang1, Y. Xia1, Z. Zhang1, X. Chen1 and M. Zhang1 1. College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

TUESDAY LIVE Q&A SESSIONS

3:00 PM EUROPE CEST

Session CA

SPIN CONVERSION EFFICIENCY BY VARIOUS METHODS TOWARDS DEVICE APPLICATIONS

Atsufumi Hirohata, Chair
University of York, York, United Kingdom

CA-01. Electrical Generation of Spin Currents. (Invited) A.D. Kent1, C. Safranski2, J. Xu3 and J.Z. Sun3 1. Center for Quantum Phenomena, Department of Physics, New York University, New York, NY, United States; 2. IBM T. J. Watson Research Center, New York, NY, United States

CA-02. Unconventional Spin Currents in Obliquely Magnetized Magnetic Films. (Invited) B. Hillebrands1,2, D. Bozhko3, H. Musienko-Shmarova1,2, V. Tyberkevych4, A.N. Slavin4, I. Syvorotka1 and A.A. Serga1,2 1. Physics, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Research Center OPTIMAS, Kaiserslautern, Germany; 3. Physics, Colorado State University, Fort Collins, CO, United States; 4. Physics, Oakland University, Rochester, MI, United States; 5. Department of Crystal Physics and Technology, Scientific Research Company “Carat”, Lviv, Ukraine

CA-03. Spin Current Generation Driven by Ferromagnetic Resonance. (Invited) T. Mewes1 and C. Mewes1 1. Physics & Astronomy, The University of Alabama System, Tuscaloosa, AL, United States
CA-04. Transverse Thermoelectric Conversion Based on Spin Caloritronics. (Invited) K. Uchida 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan

CA-05. Berry Curvature and Semimetals. (Invited) C. Felser1, Y. Sun1 and C. Shekhar1 1. Chemical Physics of Solids, Max-Planck-Gesellschaft, Dresden, Germany

CA-06. Spin Transport Driven by Emergent Magnetic Fields. (Invited) M. Matsuo1 1. Kavli Institute for Theoretical Sciences, University of Chinese Academy of Sciences, Beijing, China

ON-DEMAND SESSIONS

Session CB

SPIN INJECTION AND SPIN TRANSFER TORQUES
Tao Wang, Chair
Huazhong University of Science and Technology, Wuhan, China

CB-01. Local Control of the Exchange Bias by Current in a Pt/Co/NiO Structure. M. Stebliy1, A. Kolesnikov1, M. Bazrov1, A. Ognev1, A. Davydenko1, E. Stebliy1, X. Wang2, C. Wan2, C. Fang2, M. Zhao2, X. Han2 and A.S. Samardak1 1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China

CB-02. Very Large Domain Wall Velocities Driven by Spin Transfer Torque in Ferrimagnetic Mn,N Compounds. (Invited) S. Ghosh1, T. Komori2, A. Hallal1, J.A. Peña Garcia3, T. Gushib, T. Hirosec, H. Mitarai2, H. Okuno1, J. Vogel1, M. Chshieva, J. Attané1, L. Vila1, T. Suemasu2 and S. Pizzini3 1. SPINTEC, UGA-CNRS-CEA, Grenoble, France; 2. University of Tsukuba, Tsukuba, Japan; 3. Institut Néel, UGA-CNRS, Grenoble, France; 4. IRIG-MEM, CEA, Grenoble, France

CB-03. Optically Detected Spin-Orbit Torque Ferromagnetic Resonance in an in-Plane Magnetized Ellipse. P.S. Keatley1, K. Chatzimpaloglou1, T. Manago1,2, P. Androvitsaneas3, T. Loughran3, R.J. Hicken1, G. Mihajlović1, L. Wan1, Y. Choi1 and J. Katine1 1. Department of Physics and Astronomy, University of Exeter College of Engineering Mathematics and Physical Sciences, Exeter, United Kingdom; 2. Department of Applied Physics, Fukuoka University, Fukuoka, Japan; 3. San Jose Research Center, Western Digital Corp, San Jose, CA, United States

CB-04. High-Precision Measurement Method of Magnetic Field Induced by Spin- Accumulated Electrons in FeCoB Nanomagnet. V. Zayets1 1. Platform Photonics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan
CB-05. Tuning the Spin-Orbit Interaction in Germanium for Spin Generation, Detection and Manipulation. (Invited)
1. Institut Catala de Nanociencia i Nanotecnologia, Bellaterra, Spain; 2. Physics, Politecnico di Milano, Milano, Italy; 3. IRIG-SPINTEC, CEA Grenoble, Grenoble, France; 4. UMR CNRS Thales, Palaiseau, France; 5. IRIG-MEM, CEA Grenoble, Grenoble, France

CB-06. Theory of Spin-Orbit Torque and Dzyaloshinskii-Moriya Interaction in van der Walls Magnets.
A. Manchon1, S. Laref2, I. Smaili2, J.H. Garcia3, K. Kim4, U. Schwingenschlogl2 and S. Roche3
1. Aix-Marseille Universite, Marseille, France; 2. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 3. Institut Catala de Nanociencia i Nanotecnologia, Bellaterra, Spain; 4. Korea Institute of Science and Technology, Songbuk-gu, The Republic of Korea

ON-DEMAND SESSIONS
Session CC
SPIN ORBIT TORQUES
Shiheng Liang, Co-Chair
Hubei University, Wuhan, China
Kaiming Cai, Co-Chair
IMEC, Leuven, Belgium

CC-01. Spin-Orbit Magnetic State Readout in Scaled Ferromagnetic/Heavy Metal Nanostructures. (Invited)
V. Pham1,3, I. Groen1, S. Manipatruni2, W. Choi1, D.E. Nikonov2, E. Sagasta1, C. Lin2, T. Gosavi2, A. Marty3, L. Hueso1, I.A. Young2 and F. Casanova1
1. CIC nanoGUNE, San Sebastian, Spain; 2. Components Research, Intel Corp., Hillsboro, OR, United States; 3. Spintec, CEA-CNRS, Grenoble, France

CC-02. Pulse-Width and Thermal Effects on Field-Free Memristive Spin-Orbit Torque Switching. W. Liao1, T. Chen1, Y. Hsiao1 and C. Pai1,2
1. Materials Science and Engineering, National Taiwan University, Taipei, Taiwan; 2. Center of Atomic Initiative for New Materials, National Taiwan University, Taipei, Taiwan

CC-03. Modulation of Thermal Stability and Spin-Orbit Torque in IrMn/CoFeB/MgO Structures Through Atom Thick W Insertion. D. Xiong1, S. Peng1, J. Lu1, W. Li1, H. Wu2, Z. Li1, H. Cheng1, Y. Wang1, C. H. Back2, K. Wang2 and W. Zhao1
1. Beihang University, Beijing, China; 2. University of California Los Angeles, Los Angeles, CA, United States; 3. Technische Universität Munchen, Munchen, Germany

CC-04. Benchmarking of Spin-Orbit Torque Switching Efficiency in PtCu Alloys. C. Hu1 and C. Pai1
1. Materials Science and Engineering, National Taiwan University, Taipei, Taiwan
CC-05. Characterization of Spin-Orbit Torque Efficiency in Magnetic Heterostructures With Perpendicular Magnetic Anisotropy via Spin Torque Ferromagnetic Resonance. J. Wei1, C. He1, X. Wang1, H. Xu1, Y. Liu1, Y. Guang1, C. Wan1, J. Feng1, G. Yu1 and X. Han1 1. Institute of Physics, Beijing, China

CC-06. A two-Terminal Planar Memory Device Controlled by Spin-Orbit Torques. C. Avci1, C. Lambert1 and P. Gambardella1 1. Department of Materials, ETH Zurich, Zurich, Switzerland

CC-07. Spin-Orbit Torque Switching of Synthetic Antiferromagnetic Layer by Metallic Bilayers With Opposite Spin Hall Angles. D. Zhang1, H. Li1 and J. Wang1 1. Electrical and Computer Engineering, University of Minnesota Twin Cities, Minneapolis, MN, United States; 2. Chemical Engineering and Materials Science, University of Minnesota Twin Cities, Minneapolis, MN, United States

CC-08. Second Harmonic Study of the Self-Spin-Orbit Torques in Ferrimagnetic Materials. H. Damas1, D. Céspedes-Berrocal1,5, D. Maccariello1, A.Y. Arriola Córdova1, E. Martin1, J. Bello1, P. Tang1, P. Vallobra1, Y. Xu1, S. Migot1, J. Ghanbaja1, S.F. Zhang1, S. Mangin1, C. Panagopoulos1, V. Cros1, M. Hehn1, S. Petit-Watotel1, A. Fert1 and J. Rojas-Sanchez1 1. Institut Jean Lamour, Université de Lorraine, Nancy, France; 2. Nanyang Technological University School of Physical and Mathematical Sciences Division of Physics and Applied Physics, Singapore, Singapore; 3. Unite Mixte de Physique CNRS/Thales, Palaiseau, France; 4. Department of Physics, University of Arizona, Tucson, AZ, United States; 5. Universidad Nacional de Ingeniería, Lima, Peru

CC-09. Spin-Orbit Torque in Naturally Oxidized Ta-O/Co-Fe-B/Mg-O/Ta Structures. T. Nguyen1,2, S. Duttagupta1,3, Y. Saito4, V. De Zoya Karunathilaka1, S. Fukami1,3, S. Ikeda1,4, T. Endoh1,4 and Y. Endo1,5 1. Center for Science and Innovation Spintronics (Core Research Cluster), Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 4. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 5. Graduate School of Engineering, Tohoku University, Sendai, Japan

CC-10. Efficient Spin-Orbit Torque Generation in Semiconducting WTe2 With Hopping Transport. C. Peng1, W. Liao1, T. Chen1 and C. Pai1,2 1. Materials Science and Engineering, National Taiwan University, Taipei, Taiwan; 2. Center of Atomic Initiative for New Materials, National Taiwan University, Taipei, Taiwan

CC-11. Magnetic Layer Thickness Dependence of Spin-Orbit Torques in Pt / Co / Al (Pt | Ta) Skyrmion Magnetic Multilayers. S. Krishna1, F. Ajejas1, Y. Sassi1, N. Reyren1, S. Collin1, J. George1, H. Jaffrès1, V. Cros1 and A. Fert1 1. Unité Mixte de Physique, CNRS, Thales, Université Paris-Saclay, Palaiseau, France
CC-12. Detection of Spin-Orbit Torques for in-Plane Magnetized Heterostructures by Utilizing Spin Hall Effective Field. Y. Liu, T. Chen, T. Lo, T. Tsai, S. Yang, Y. Chang, J. Wei and C. Pai. 1. Materials Science and Engineering, National Taiwan University, Taipei, Taiwan; 2. Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan; 3. Center of Atomic Initiative for New Materials, National Taiwan University, Taipei, Taiwan


CC-14. Spin Hall Magnetoresistance and Spin Orbit Torque Efficiency in (Pt,Ta)/FeCoB Bilayers. M. Kuepferling, A. Magni, A. Sola, V. Basso, G. Soares, W. Skowronski, S. Lazarzki, K. Grochoł, M.V. Khanjani and J. Langer. 1. Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 2. AGH University of Science and Technology, Krakow, Poland; 3. Singulus Technologies AG, Kahl am Main, Germany

ON-DEMAND SESSIONS

Session CD

SPIN HALL EFFECTS

Yi Wang, Chair
Dalian University of Technology, Dalian, China

CD-01. Spin Current Enhancement by Inserting Ultra-Thin Magnetic Layer at Interface Between YIG and Pt. (Invited) H. Yuasa. 1. Kyushu University, Fukuoka, Japan

CD-02. Spin to Charge Conversion in the Topological Insulator HgTe and in STO-Based two-Dimensional Electron gas. (Invited) J. Attané. 1. Spintec, University Grenoble Alpes, Grenoble, France

CD-03. Spin Hall Conductivity Enhancement of Tungsten by Copper Alloying. B. Coester, G.D. Wong, X. Zhan, J. Tang, W. Gan and W. Lew. 1. School of Physical & Mathematical Sciences, Nanyang Technological University College of Science, Singapore, Singapore; 2. MHT Key Laboratory of Advanced Metallic and Intermetallic Materials Technology, School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China
CD-04. High-Throughput Techniques for Measuring the Spin Hall Effect. M. Meineker1, B. Glinti1s, O. Gueckstock1,2, T. Seifert2,3, L. Lienberger1,2, M. Weiler3,3, S. Wimmer1, H. Ebert1 and T. Kampfrath1,2,3 1. Faculty of Physics, Universitat Bielefeld, Bielefeld, Germany; 2. Department of Physics, Freie Universität Berlin, Berlin, Germany; 3. Walther-Meissner-Institut für Tiefenmessung, Garching, Germany; 4. Department of Electrical Engineering and Information Technology, Technische Universität Darmstadt, Darmstadt, Germany

CD-05. Magnetization-Dependent Inverse Spin Hall Effect at Perpendicular Magnetized Tb-Co/Pt Interface. A. Yagmur1, H. Awano1 and K. Tanabe1 1. Toyota Technological Institute, Nagoya, Japan

CD-06. Role of the Interfacial Asymmetric Spin Scattering at Ferromagnet-Pt Interfaces. V. Pham1, M. Cosset-Cheneau1, A. Brenac1, O. Boule1, A. Marty1, J. Attané1 and L. Vila1 1. SPINtronique et Technologie des Composants, Grenoble, France

CD-07. Effect of Ta Crystallite Size on Spin-Mixing Conductance of Ta/Ni80Fe20 Bilayer Structure. S. K1, M. Talluri1, B. Paikaray1, J. Pala1 and C. Murapaka1 1. Materials Science and Metallurgical Engineering, Indian Institute of Technology Hyderabad, Hyderabad, India

CD-08. Spin to Charge Conversion at LaAlO3/SrTiO3 Interface States. A. El Hamdi1, M. Boselli2, J. Chauleau1, S. Gariglio2, J. Triscone1 and M. Viret1 1. SPINtronique et Technologie des Composants, Grenoble, France; 2. Département de Physique de la Matière Quantique, University of Geneva, Geneva, Switzerland

CD-09. Non-Conventional Spin Hall Effect in YPt Alloy. T. Shirokura1, K. Fujiwara1 and P.N. Hai1,2 1. Tokyo Institute of Technology, Tokyo, Japan; 2. Tokyo University, Tokyo, Japan

CD-10. Charge-to-Spin Conversion in Perpendicularly Magnetized Ferromagnetic Materials. Y. Hibino1, T. Taniguchi1, K. Yakushiji1, A. Fukushima1, H. Kubota1 and S. Yuasa1 1. Research Center for Emerging Computing Technologies, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

CD-11. Independence of the Inverse Spin Hall Effect With the Magnetic Phase in Thin NiCu Films. P. Noël1, S. Varotto1,2,3, M. Cosset-Cheneau2, C. Grezes2, Y. Fu3, F. Binda1, C. Murer1, C. Avci1, C. Lambert1, P. Warin2, A. Brenac2, C. Rinaldi2, J. Jacquot4, S. Gambarelli4, V. Baltz2, L. Vila2, J. Attané2 and P. Gumbardella1 1. DMAT, ETH Zurich, Zurich, Switzerland; 2. CEA SYMMES, Grenoble, France; 3. Politecnico di Milano Dipartimento di Fisica, Milano, Italy; 4. CEA SYMMES, Grenoble, France

Monday 55
CD-12. Interface Optical Spin Generation in a Ferromagnet/Heavy Metal Heterostructure. S. Iihama1,2, K. Ishibashi3,4 and S. Mizukami1,2. 1. Frontier Research Institute for Interdisciplinary Sciences (FRIS), Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network (CSRN), Tohoku University, Sendai, Japan; 3. Department of Applied Physics, Tohoku University, Sendai, Japan; 4. Advanced Institute for Materials Research (AIMR), Tohoku University, Sendai, Japan


ON-DEMAND SESSIONS

Session CE

SPIN CURRENTS

Dushyant Kumar, Chair
National University of Singapore, Singapore

CE-01. Impact of Thermal Conductivity in Insulators on Thermally Induced Spin Currents. (Invited) T. Kuschel. 1. Physics, Universitat Bielefeld, Bielefeld, Germany

CE-02. Controlling Spin Current Polarization Through non-Collinear Antiferromagnetism. (Invited) T. Nan. 1. Institute of Microelectronics, Tsinghua University, Beijing, China

CE-03. Spin Current Induced by a Surface Plasmon Polariton. T. Wijaya1, D. Oue2, M. Matsuo3, Y. Ito4, K. Elphick5, D. Lloyd5, H. Uchida1, M. Inoue1 and A. Hirohata2. 1. Graduate School of Engineering, The University of Tokyo, Bunkyo-ku, Japan; 2. Imperial College London, London, United Kingdom; 3. Toyoohashi University of Technology, Toyoohashi, Japan; 4. Chinese Academy of Sciences, Beijing, China; 5. University of York, York, United Kingdom

CE-04. Injection, Transport, Detection, and Modulation of Magnon Spin Currents in Magnetic Insulators. S. Velez1, J. Gao1, J. Gomez-Perez1, C. Lambert1, L. Hueso2, M. Fiebig1, F. Casanova2 and P. Gambardella1. 1. Department of Materials, ETH Zurich, Zurich, Switzerland; 2. CIC nanoGUNE, Donostia-San Sebastian, Spain

CE-05. Magnon Transport in Three-Terminal YIG/Pt Nanostructures Studied by dc and ac Detection Techniques. J. Gückelhorn1,2, T. Wimmer1,2, S. Geprägs1, H. Huebl1,2, R. Gross1,2 and M. Althammer1,2. 1. Magnetism and Spintronics, Walther-Meissner-Institut für Tiefenpestorforschung, Garching, Germany; 2. Physik Department, Technische Universität München, München, Germany
Ultra-low Power Domain Wall Device for Spin-Based Neuromorphic Computing. D. Kumar\textsuperscript{1}, H. Chung\textsuperscript{2}, J. Chan\textsuperscript{1}, T. Jin\textsuperscript{1}, C. Poh\textsuperscript{1}, S. Lim\textsuperscript{2}, R. Sbiaa\textsuperscript{3} and S. Piramanayagam\textsuperscript{1}

\textsuperscript{1} School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; \textsuperscript{2} Agency for Science Technology and Research, Singapore, Singapore; \textsuperscript{3} Physics, Sultan Qaboos University, Muscat, Oman

Spin-Injection-Generated Shock Waves and Solitons in a Ferromagnetic Nanowire. M. Hu\textsuperscript{1}, E. Iacocca\textsuperscript{2} and M. Hoefer\textsuperscript{1}

\textsuperscript{1} Applied Mathematics, University of Colorado Boulder, Boulder, CO, United States; \textsuperscript{2} Department of Mathematics, Physics, and Electrical Engineering, Northumbria University, Newcastle upon Tyne, United Kingdom

Magnetic and Spintronic Properties of Scandium Substituted Terbium Iron Garnet Thin Films. B. Khurana\textsuperscript{1}, J. Bauer\textsuperscript{1} and C. Ross\textsuperscript{1}

\textsuperscript{1} Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States

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\textsuperscript{1} Applied Mathematics, University of Colorado Boulder, Boulder, CO, United States; \textsuperscript{2} Department of Mathematics, Physics, and Electrical Engineering, Northumbria University, Newcastle upon Tyne, United Kingdom

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\textsuperscript{1} Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States

Magnetic and Spintronic Properties of Scandium Substituted Terbium Iron Garnet Thin Films. B. Khurana\textsuperscript{1}, J. Bauer\textsuperscript{1} and C. Ross\textsuperscript{1}

\textsuperscript{1} Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States

Seebeck-Driven Colossal Transverse Thermoelectric Generation. W. Zhou\textsuperscript{1}, K. Yamamoto\textsuperscript{1}, A. Miura\textsuperscript{1}, R. Iguchi\textsuperscript{1}, Y. Miura\textsuperscript{1}, K. Uchida\textsuperscript{1,2} and Y. Sakuraba\textsuperscript{1,3}

\textsuperscript{1} National Institute for Materials Science, Tsukuba, Japan; \textsuperscript{2} Institute for Materials Research, Tohoku University, Sendai, Japan; \textsuperscript{3} Japan Science \& Technology Agency, PRESTO, Kawaguchi, Japan

Relaxation Process of Spin-Polarized Quasiparticles in a Superconducting Nb Wire. T. Iwahori\textsuperscript{1}, K. Mizokami\textsuperscript{1}, R. Matsuda\textsuperscript{1}, K. Ohnishi\textsuperscript{1} and T. Kimura\textsuperscript{1}

\textsuperscript{1} Physics, Kyushu University, Fukuoka, Japan

Theoretical Study on Four-Fold Symmetric Anisotropic Magnetoresistance Effect in Cubic Single-Crystal Ferromagnetic Model. Y. Yahagi\textsuperscript{1}, D. Miura\textsuperscript{1} and A. Sakuma\textsuperscript{1}

\textsuperscript{1} Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan

Strong Enhancement of the Orbital Rashba Effect in Cu Film by Surface Oxidization. D. Go\textsuperscript{2,3}, D. Jo\textsuperscript{1}, T. Gao\textsuperscript{4,5}, K. Ando\textsuperscript{4,5}, S. Blügel\textsuperscript{1}, H. Lee\textsuperscript{1} and Y. Mokrousov\textsuperscript{2,7}

\textsuperscript{1} Department of Physics, Pohang University of Science and Technology, Pohang, The Republic of Korea; \textsuperscript{2} Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich GmbH, Jülich, Germany; \textsuperscript{3} Institute of Physics, Johannes Gutenberg Universität Mainz, Mainz, Germany; \textsuperscript{4} Department of Applied Physics and Physico-Informatics, Keio University, Yokohama, Japan; \textsuperscript{5} Keio Institute of Pure and Applied Sciences (KiPAS), Keio University, Yokohama, Japan; \textsuperscript{6} Department of Physics, Pohang University of Science and Technology, Pohang, The Republic of Korea; \textsuperscript{7} Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich GmbH, Jülich, Germany; \textsuperscript{8} Institute of Physics, Johannes Gutenberg Universität Mainz, Mainz, Germany; \textsuperscript{9} Department of Applied Physics and Physico-Informatics, Keio University, Yokohama, Japan; \textsuperscript{10} Keio Institute of Pure and Applied Sciences (KiPAS), Keio University, Yokohama, Japan
ON-DEMAND SESSIONS

Session CF
CONVENTIONAL STT-MRAM MATERIALS, DEVICES AND TECHNOLOGY
Guohan Hu, Chair
IBM, Yorktown Heights, NY, United States

CF-01. Reliable High Density STT-MRAM Products. (Invited)
G. Shimon1, H.K. Lee1, S. Ikekawa1, S. Aggarwal1, B. Hughes1,
F.B. Mancoff1, J. Janesky1, J. Sun1, K. Nagel1 and
M. DeHerrera1 1. Technology R&D, Everspin Technologies Inc,
Chandler, AZ, United States

CF-02. Embedded STT-MRAM for 14nm CMOS Node Cache
Applications. (Invited) M. Rizzolo1 1. International Business
Machines Corp, Albany, NY, United States

CF-03. Perpendicular Magnetic Tunnel Junctions With Reference
Layer Based on Four Anti-Ferromagnetically Coupled Co/
Pt Layers. H. Honjo1, S. Miura1, K. Nishioka1, H. Nagauma1,3,
T. Watanabe1, Y. Noguchi1, T. Nguyen1,3, M. Yasuhira1,
S. Ikeda1,4 and T. Endoh1,2 1. Center for Innovative Integrated
Electronic Systems, Tohoku University, Sendai, Japan;
2. Graduate School of Engineering, Tohoku University, Sendai,
Japan; 3. Center for Spintronics Research Network, Tohoku
University, Sendai, Japan; 4. Center for Science and Innovation
in Spintronics, Tohoku University, Sendai, Japan

CF-04. Giant Perpendicular Magnetic Anisotropy Enhancement in
MgO-Based Magnetic Tunnel Junction by Using Co/Fe
Composite Layer. L. Vojáček1,2*, F. Ibrahim1, A. Hallal1,
B. Dieny1 and M. Chshiev1,3 1. SPINtronique et Technologie des
Composants, Grenoble, France; 2. Stredoevropsky
Technologicky Institut, Brno, Czechia; 3. Institut Universitaire
de France, Paris, France

CF-05. Effect of Magnetic Coupling Between two CoFeB Layers on
Thermal Stability in Perpendicular Magnetic Tunnel
Junctions With MgO/CoFeB/Insertion Layer/CoFeB/MgO
Free Layer. K. Nishioka1, S. Miura1, H. Honjo1, H. Nagauma1,3,
T. Nguyen1,3, S. Ikeda1,2 and T. Endoh1,2 1. Center for
Innovative Integrated Electronic Systems, Tohoku University,
Sendai, Japan; 2. Graduate School of Engineering, Tohoku
University, Sendai, Japan; 3. Center for Science and Innovation
in Spintronics, Tohoku University, Sendai, Japan

CF-06. Towards Spintronic Memory Without Platinum Group
Metals (PGMs) for Improved Sustainability. A. Palomino1,
J. Marty2, S. Auffret1, I. Joumard1, R. Sousa1, I. Prejbeanu1,
B. Ageron2 and B. Dieny1 1. Univ. Grenoble Alpes, CEA, CNRS,
Grenoble INP, IRIG-SPINTEC, Grenoble, France;
2. Laboratoire CERAG, Univ. Grenoble Alpes, Saint Martin
d’Hères, France

CF-07. SAF Based on Co/Ni Multilayers With Improved Annealing
Tolerance for Sustainable Pt-Free Reference Layer of STT-
MRAM. A. Palomino1, M. Mansueti1, S. Auffret1, I. Joumard1,
L. Vila1, R. Sousa1, I. Prejbeanu1 and B. Dieny1 1. Univ.
Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG-SPINTEC,
Grenoble, France
CF-08. Correlation of Interfacial Perpendicular Magnetic Anisotropy and Interlayer Exchange Coupling in CoFe/W/CoFe Structures. J. Chen1,2, S. Peng1,2, D. Xiong1,2, H. Cheng1,2, H. Zhou1,2, Y. Jiang1,2, J. Lu1,2, W. Li1,2 and W. Zhao1,2 1. Fert Beijing Institute, BDBC, Beihang University, Beijing, China; 2. School of Integrated Circuit Science and Engineering, Beihang University, Beijing, China

CF-09. Spin Torque Switching of Perpendicular Magnetic Tunnel Junction Nanopillars at Cryogenic Temperatures. L. Rehm1, G. WolF2, B. Kardasz2, E. Cogulu1, Y. Chen1, M. Pinarbasi2 and A.D. Kent1 1. Physics, New York University, New York, NY, United States; 2. Spin Memory Inc, Fremont, CA, United States

CF-10. The Effect of Reduced Exchange Interactions on Switching of Perpendicular Magnetic Tunnel Junctions. J. Beik Mohammadi1 and A.D. Kent2 1. Loyola University New Orleans, New Orleans, LA, United States; 2. New York University, New York, NY, United States

CF-11. Modelling and Optimization of Double Magnetic Tunnel Junctions With Switchable Assistance Layer for High Performance STT-MRAM Applications. D. Sanchez Hazen1,2, S. Auffret1, I. Joumard1, L. Vila1, L.D. Buda-Prejbeanu1,2, R. Sousa1, I. Prejbeanu1 and B. Dieny1 1. SPINtronique et Technologie des Composants, Grenoble, France; 2. Institut Polytechnique de Grenoble, Grenoble, France

CF-12. Demonstration of BEOL-Compatible Double Magnetic Tunnel Junction PSTT-MRAM Devices for Low Power Computing. S. Rao1, R. Carpenter1, S. Coutel1, S. Van Beek1, M. Perumkunnil1, N. Jossart2, B. O’ Sullivan1, S. Kundu1, W. Kim1, K. Garelio2, L. Souriau1, F. Yasin1, S. Houshmand Sharifi1, L. Goux1, D. Crotti2 and G.S. Kar1 1. IMEC, Leuven, Belgium; 2. SPINtronique et Technologie des Composants, Grenoble, France

ON-DEMAND SESSIONS

Session CG
EXPLORATORY STT/SOT MRAM MATERIALS, DEVICES AND TECHNOLOGY
Shunsuke Fukami, Co-Chair Tohoku University, Sendai, Japan Lin Xue, Co-Chair Applied Materials Inc, Santa Clara, CA, United States

CG-01. Ultra-Small Shape-Anisotropy Magnetic Tunnel Junctions Below 10 nm - Material, Device Engineering, and Performance. (Invited) B. Jinnai1, I. Igarashi1, S. Fukami1 and H. Ohno1 1. Tohoku University, Sendai, Japan
CG-02. Crossover of Magnetization Reversal Mode With Thickness and Diameter in Shape-Anisotropy Magnetic Tunnel Junctions. J. Igarashi1, B. Jinmai2, K. Watanabe1, S. Fukami1,3 and H. Ohno1,3. 1. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan

CG-03. Magnetization Reversal Driven by Spin-Transfer-Torque in sub-20 nm Perpendicular Shape Anisotropy Magnetic Tunnel Junctions. N. Caçoilo1, S. Lequeux1, A. Palomino1, N. Strelkov1, B. Dieny1, R. Sousa1, O. Fruchart1, I.L. Prejean1 and L.D. Buda-Prejean1. 1. Univ.Grenoble Alpes, CEA, CNRS, Grenoble INP, SPINTEC, Grenoble, France

CG-04. Resonance-Enhanced Exchange Coupling for Voltage-Controlled Magnetization Switching. S. Sayed1, C. Hsu1,2, C. Hsu1, N. Roschewsky1, S. Yang1 and S. Salahuddin1,2. 1. Electrical Engineering and Computer Sciences, University of California Berkeley, Berkeley, CA, United States; 2. Materials Sciences Division, E O Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. IBM Almaden Research Center, San Jose, CA, United States

CG-05. Magnetic Reversal and Critical Current Transparency of CoFeB Superconductor-Ferromagnet-Superconductor Heterostructures. M. Loving1, T. Ambrose1, E. Din1, S. Keebaugh1, D. Miller1, R. Pownall1, N. Rizzo1, A. Sidorov1 and N. Siwak1. 1. Northrop Grumman Mission Systems, Linthicum, MD, United States

CG-06. Current-Induced Crystallisation in Heusler Alloy Films. W. Frost1, K. Elphick1, M. Samiepour1 and A. Hirokata1. 1. University of York, York, United Kingdom

CG-07. Advanced MTJ and SOT Technology for AI and Automobile Applications. (Invited) T. Endo1,2. 1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan

CG-08. Effect of Insertion Layer on Reducing Switching Current Density in Spin-Orbit Torque Magnetic Tunnel Junction. L. Huang1, J. Lourembam1, D.M. Repaka1, J. Qiu1, S. Yap1, Y. Toh1 and S. Lim1. 1. Institute of Materials Research and Engineering, Singapore, Singapore

CG-09. Spin Orbit Torque Driven Multi-Level Switching in He+ Irradiated W-CoFeB-MgO Hall Bars With Perpendicular Anisotropy. X. Zhao1,2, M. Sall1, J. Langer4, B. Ocker4, G. Jakob5, M. Klau5, W. Zhao5 and D. Ravelosona2,3. 1. Beihang University, Beijing, China; 2. Centre National de la Recherche Scientifique, Paris, France; 3. Spin-Ion Technologies, Palaiseau, France; 4. Singulus, Kahl am Main, Germany; 5. Johannes Gutenberg Universitat Mainz, Mainz, Germany

CG-10. All-Electrical Manipulation of Magnetization in Magnetic Tunnel Junction via Spin–Orbit Torque. W. Kong1, C. Wan1, X. Wang1 and X. Han1. 1. Chinese Academy of Sciences Institute of Physics, Beijing, China
CG-11. Evaluation of Read Disturbance Reduction Effect by SOT-MRAM Bi-Directional Read on Device Size Dependence. Y. Kishi1, A. Yamada1, M. Ke1 and T. Kawahara1 1. Department of Electrical Engineering, Faculty of Engineering, Tokyo University of Science, Shinjuku-ku, Japan


CG-13. Voltage-Gate Assisted Spin-Orbit Torque MRAM for High-Density and Low Power Embedded Applications. (Invited) Y. Wu1, K. Garello2, W. Kim1, M. Gupta1, M. Perumkunnil1, S. Van Beek1, R. Carpenter1, S. Rao1, F. Yasin1, K.K. Vudya Sethu1,2, V. Katel1,3, D. Crotti2, S. Cour1 and G.S. Kar1 1. IMEC, Leuven, Belgium; 2. SPINtronique et Technologie des Composants, Grenoble, France; 3. ESAT, KU Leuven, Leuven, Belgium

ON-DEMAND SESSIONS

Session CP

SPINTRONICS FUNDAMENTALS

(Poster Session)

Xin Fan, Co-Chair
University of Denver Division of Natural Sciences and Mathematics,
Denver, CO, United States

Shuyuan Shi, Co-Chair
Beihang University, Beijing, China

CP-01. Domain Wall Device With a Graded Anisotropy Field as Artificial Neuron for Neuromorphic Computing. W. Mah1, T. Jin1, D. Kumar1 and S. Piramanayagam1 1. SPMS, Nanyang Technological University, Singapore, Singapore

CP-02. Study on the Critical State of Two-Dimensional Resonators Topological Insulator. W. Wang1,2, W. Mo1,2, F. Jin1,2, K. Dong1,2, J. Song1,2 and Y. Hui1,2 1. School of Automation, China University of Geosciences, Wuhan, China; 2. China University of Geosciences, Wuhan, Hubei key Laboratory of Advanced Control and Intelligent Automation for Complex Systems, Wuhan, China

CP-03. Large Spin-Orbit Torque Efficiency in Epitaxial L1, PtMn3 / Py Heterostructures. L. Yu1, M. Oogane1,3, M. Tsunoda2,3 and Y. Ando1,3 1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan
Unconventional Magnetoresistance Induced by Spermimagnetism of GdFeCo.

J. Park1, Y. Hirata2, J. Kang1, S. Lee3, S. Kim4, C. Phuoc6, J. Jeong4, J. Park5, S. Park5, Y. Jo6, A. Tsukamoto6, T. Ono7,8, S. Kim1 and K. Kim1

1. Department of Physics, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 2. Institute for Chemical Research, Kyoto University, Kyoto, Japan; 3. Department of Physics, University of Ulsan, Ulsan, The Republic of Korea; 4. Department of Materials Science and Engineering, Chungnam National University, Daejeon, The Republic of Korea; 5. Center for Scientific Instrumentation, Korea Basic Science Institute, Daejeon, The Republic of Korea; 6. College of Science and Technology, Nihon University, Funabashi, Japan; 7. Center for Spintronics Research Network (CSRN), Graduate school of Engineering Science, Osaka University, Osaka, Japan

Large Low Magnetic Field Magnetocapacitance Effect and Spin Accumulation in Graphene Oxide.

S. Singh1, M. R1, B. Hiremath1, B. Kori1, S. Kumar1, Y. Bitla2 and R.S. Joshi1

1. Physics, Central University of Karnataka, Gulbarga, India; 2. Physics, Central University of Rajasthan, Ajmer, India

Magnetotransport Phenomena in Topological Insulator / Superconductor Bi2Te3/Nb Bilayer and Trilayer Thin Films.

A. Pilidi1, T. Speliotis1 and G. Litsardakis2

1. Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research “Demokritos”, Athens, Greece; 2. Electrical & Computer Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

Evidence of Magnetization Switching by Anomalous Spin Hall Torque in NiFe.

T. Ma1, C. Wan1, X. Wang1, W. Yang1, C. Guo1, C. Fang1, M. Zhao1, J. Dong1, Y. Zhang1 and X. Han1

1. Institute of Physics, Chinese Academy of Sciences, Beijing, China

Enhancement of the Spin Hall Magnetoresistance in Ta/Pt/Ni80Fe20/MgO(100) Heterostructures by Competing Spin Currents.

H. Jiang1, K. Wang1, Y. Hui1, K. Dong1, W. Mo1, J. Song1 and F. Jin1

1. China University of Geosciences School of Automation, Wuhan, China

Enhancement of Acoustic Spin Pumping by Acoustic Distributed Bragg Reflector Cavity.

Y. Hwang1, J. Puebla2, M. Xu1, A. Lagarrigue2, K. Kondou2 and Y. Otani1,2

1. Institute of Solid State Physics, Tokyo University, Kashiwa, Japan; 2. RIKEN Center for Emergent Physical Characteristics, Wako, Japan

Influence of the Spin Pumping Induced Inverse Spin Hall Effect on Spin-Torque Ferromagnetic Resonance Measurements.

Q. Liu1, Y. Zhang3, L. Sun1,2, B. Miao1,2, X. Wang3 and H. Ding1,2

1. Physics, Nanjing University, Nanjing, China; 2. Collaboration Innovation Center of Advanced Microstructures, Nanjing, China; 3. Physics, Hong Kong University of Science and Technology School of Science, Hong Kong, China
CP-11. Determination of Spin Torque Efficiency in Ferromagnetic Metals via Spin-Torque Ferromagnetic Resonance. W. Yang1, J. Wei1, C. Wan1, Y. Xing1, Z. Yan1, X. Wang1, C. Fang1, C. Guo1, G. Yu1 and X. Han1. 1. Chinese Academy of Sciences, Institute of Physics, University of Chinese Academy of Sciences, Beijing, China

CP-12. Quantitative Estimation of Thermoelectric Contributions in Spin Pumping Signals Through Microwave Photoresistance Measurements. J. Cheng1, K. He1, M. Yang1, Q. Liu1, R. Yu1, L. Sun1,2, J. Ding3, B. Miao1,2, M. Wu3 and H. Ding1,2. 1. Nanjing University, Nanjing, China; 2. Collaborative Innovation Center of Advanced Microstructures, Nanjing, China; 3. Colorado State University, Fort Collins, CO, United States

CP-13. Qualitative Evaluation of the Temperature Dependence of Dynamical Spin Injection in CoFeB/Pt/CoFeB Trilayer Thin Films. S. Ohinata1, R. limori1 and T. Kimura1. 1. Physics, Kyushu University, Fukuoka, Japan


CP-15. Spin Seebeck Effect in Antiferromagnetic PtMn/YIG(Yttrium Iron Garnet) Thin Films. S. Ranjbar1, A. Yagmur1, M. Al-Mahdawi1, M. Oogane2,3, Y. Ando2,3, K. Tanabe1 and H. Awano1. 1. Toyota Technological Institute, Nagoya, Japan; 2. Tohoku University - Aobayama Campus, Sendai, Japan; 3. Center for Science and Innovation in Spintronics (Core Research Cluster), Organization for Advanced Studies, Tohoku University, Sendai, Japan

ON-DEMAND SESSIONS

Session CQ

NOVEL IMAGING AND MEASUREMENT TECHNIQUES I

(Poster Session)

Jose Mardegan, Chair
DESY, Hamburg, Germany

CQ-01. Calibration of a Coil Array Geometry Using an X-ray Computed Tomography. D. Oyama¹, Y. Adachi¹, M. Higuchi¹ and G. Uehara¹ 1. Applied Electronics Laboratory, Kanazawa Institute of Technology, Kanazawa, Japan

CQ-02. Residual Flux Density Measurement Method of the Single-Phase Transformer Based on Phase Difference. Y. Ren¹,² 1. Hebei University of Technology State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 2. Hebei University of Technology, Tianjin, China

CQ-03. Three-Dimensional Magnetic Field Gradient Imaging of Permanent Magnet by Alternating Magnetic Force Microscopy: Transformation of Measuring Magnetic Field Direction Based on MFM Tip Transfer Function. H. Saito¹, S. Wada¹ and T. Matsumura¹ 1. Graduate School of Engineering Science, Akita University, Akita, Japan

CQ-04. Inverse Problem Analysis in Magnetic Nanoparticle Tomography With Minimum Variance Spatial Filter. N. Okamura¹, T. Sasayama¹ and T. Yoshida¹ 1. Kyushu University, Fukuoka, Japan

CQ-05. Estimation of Magnetocardiography Current Sources Using Multiple Spatial Filters. K. Kobayashi¹, M. Iwai¹, Y. Ono¹ and W. Sun² 1. Iwate University, Morioka, Japan; 2. Kindai University, Hiroshima, Japan

CQ-06. Magnetic Properties Measurement and Analysis of Electrical Steel Sheet Under Cutting Influence. Y. Li¹, Y. Fu¹, Y. Dou¹, C. Zhang¹ and K. Zhang¹ 1. Hebei University of Technology, Tianjin, China

CQ-07. Localized Magnetic Properties Measurement of Interlocking Core Laminations. Y. Li¹, K. Zhang¹, Y. Dou¹, Y. Fu¹ and C. Zhang¹ 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

CQ-08. 3D Magnetic Structure of Domain Walls in Soft Magnetic Racetracks by MFM and X-ray Microscopy. J. Hermosa¹,², A. Hierro Rodríguez¹,², J. Martin¹,², A. Sorrentino³, M. Velez¹,², E. Pereiro³, C. Quiros¹,² and S. Ferrer³ 1. Physics Dept., Universidad de Oviedo, Oviedo, Spain; 2. Centro de Investigacion en Nanomateriales y Nanotecnologia, El Entrego, Spain; 3. ALBA Synchrotron, Cerdanyola del Vallès, Spain
CQ-09. Research on Mid-Distance High-Efficiency Wireless Power Transmission System Using Class E Amplifier. N. Zhang1, Y. Zhang1, S. Ning2, S. Wang3, B. Lai3 and T. Zhu3 1. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. School of Electronic Information and Artificial Intelligence, Shannxi University of Science and Technology, Xi’an, China; 3. Quanzhou Experimental Middle School, Quanzhou, China

CQ-10. Estimation of the Focality of Coils and Quality of Stimulation of Biological Tissues During Transcranial Magnetic Stimulation. I.C. Carmona1, O.F. Afuwape2, D.C. Jiles3 and R.L. Hadimani1,3 1. Dept. of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Dept. of Electrical & Computer Engineering, Iowa State University, Ames, IA, United States; 3. Dept. of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States

CQ-11. Steel Ball Sorting Based on Electromagnetic Induction Using Eddy Current Technique. D. Dao1, J. Jeng1, C. Dinh1, V. Doan1, T. Pham1 and H. Nguyen1 1. Department of Mechanical Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan

ON-DEMAND SESSIONS

Session CR

NOVEL IMAGING AND MEASUREMENT TECHNIQUES II
(Poster Session)

Chuanpu Liu, Chair

Colorado State University, Boulder, CO, United States

CR-01. Study on Sensor and Analysis Area in the Signal Source Estimation by Spatial Filter for Magnetocardiogram. M. Iwai1, S. Narita1, W. Sun2 and K. Kobayashi1 1. Iwate University, Morioka, Japan; 2. Kinki University, Higashiosaka, Japan

CR-02. Influence of the Earth’s Magnetic Field on the Diagnosis of Steel Rope With the use of MFAM Technology. P. Mazurek1 1. Department of Machinery Engineering and Transport, AGH University of Science and Technology, Krakow, Poland

CR-03. Adaptive Suppression of Mode Mixing in CEEMD Based on Genetic Algorithm for Motor Bearing Fault Diagnosis. Z. Ke1, C. Di2 and X. Bao1 1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China

CR-04. Diamagnetic Susceptibility of a Single Particle Detected From its Parabolic Movement Caused by Magnetic Field Gradient and Terrestrial Gravity. K. Hisayoshi1, S. Jimouchi1, C. Uyeda1 and K. Terada1 1. Earth & Space Science, Osaka University, Toyonaka, Japan

A. Aubert, K. Skokov, G. Gomez, I. Radulov, F. Wilhelm, A. Rogalev, H. Wende, O. Gutfleisch and K. Ollefs

Technische Universitat Darmstadt, Darmstadt, Germany; 2. Universitat Duisburg-Essen, Duisburg, Germany; 3. ESRF, Grenoble, France

Magnetic Anisotropy Detected in a Small Crystal by Observing its Rotational Oscillation Caused by a Ferrite Magnetic Circuit.

C. Uyeda, S. Sugiura, K. Hisayoshi and K. Terada

Osaka University, Suita, Japan

Design of Transcranial Magnetic Stimulation Coils for Mouse With Improved Stimulus Focus and Intensity.

H. Yu, B. Du, G. Xu and L. Guo

Hebei University of Technology, Tianjin, China

Magnetic Anisotropy Detected in a Small Crystal by Observing its Rotational Oscillation Caused by a Ferrite Magnetic Circuit.

C. Uyeda, S. Sugiura, K. Hisayoshi and K. Terada

Osaka University, Osaka, Japan

Study on the Multi-Coil Data Fusion Based on Planar Eddy Current Coil in Non-Destructive Testing.

N. Zhang, Z. Ma, S. Ning, S. Wang, X. Xu, Y. Zhang, Y. Du and H. Qiu

1. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. School of Electronic Information and Artificial Intelligence, Shaanxi University of Science and Technology, Xi’an, China

Magnetization Measurement System With Giant Magnetoresistance Zero-Field Detector.

V. Doan, J. Jeng, H. Nguyen, C. Dinh, D. Dao and T. Pham

Department of Mechanical Engineering, National Kaohsiung University of Science and Technology, Kaohsiung City 807618, Taiwan


J. Qiu and J. Ou

College of Optoelectronic Engineering, Chongqing University, Chongqing, China

Design of Stable Biphasic Pulsed Magnetic Fields for Portable Diagnostic Applications.

N. Prabhu Gaunkar, W. Theh, N. Bouda and M. Mina

Electrical and Computer Engineering, Iowa State University, Ames, IA, United States
CS-01. Dynamical Rearrangements of 3D Vortex Structures in Moving Domain Walls in Continuous and Antidot Patterened Permalloy Films. V.V. Zverev1,2 and I. Izmozherov2
1. Department of Theoretical Physics and Applied Mathematics, Ural'skij federal'nij universitet imeni pervogo Prezidenta Rossi' B N El'cina, Ekaterinburg, Russian Federation; 2. Institut fiziki metallov imeni M N Miheeva Ural'skogo otdelenia Rossijskoj akademii nauk, Ekaterinburg, Russian Federation

CS-02. Numerical Simulation of the Structure and Dynamics of Magnetic Vortices and Solitons in Multilayer Ferromagnetic Nanostructures. K. Samsonov1, S. Stepanov2, G. Antonov2, A. Ekomasov2, R. Kudryavtsev3, A. Gumerov2, K. Zvezdin4 and E.G. Ekomasov1,2 1. Department of Physical Processes and Systems Modeling, University of Tyumen, Tyumen, Russian Federation; 2. Department of Theoretical Physics, Bashkir State University, Ufa, Russian Federation; 3. Institute of Molecule and Crystal Physics UFIC RAS, Ufa, Russian Federation; 4. A. M. Prokhorova Institute of General Physics, RAN, Moscow, Russian Federation

CS-03. Angular Remanence and Anisotropy Orientation Distribution in Nickel Films on LiNbO3. S.A. Mathews1 and N. Charipar1
1. Materials Science and Technology Division, US Naval Research Laboratory, Washington, DC, United States


CS-05. Application of an Improved Interpolating Element-Free Galerkin Method in Magnetic Field Calculation. F. Yang1 and C. Gu1 1. Huazhong University of Science and Technology School of Electrical and Electronic Engineering, Wuhan, China

CS-06. An Improved Hysteresis Model Based on Bouc-Wen Model Under Quasi-Static and Dynamic Magnetizations. Y. Li3, Y. Li3, Z. Lin1, Z. Cheng2 and Y. Tian1 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. R&D Center, Baoding Tianwei Group Co., Ltd, Baoding, China

CS-07. Circular Polarized Vortex Beam Generating Based on Leaky-Wave Antenna With Substrate Integrated Waveguide. Q. Zhang1, W. Chen2, Y. Zhao3 and J. Fu1 1. Harbin Institute of Technology, Harbin, China
CS-08. Field Computation in Media Exhibiting Hysteresis Using Hopfield Neural Networks. A. Adly and S. Abd-El-Hafiz
1. Engineering Mathematics and Physics Dept., Cairo University, Giza, Egypt; 2. Elect. Power Engineering Dept., Cairo University, Giza, Egypt

CS-09. Magnetic Properties and Moment Field Motion Determined by the Shape of the Magnetic Nanowire. Y. Chen and B. Stadler
1. CEMS, University of Minnesota, Minneapolis, MN, United States; 2. ECE, University of Minnesota, Minneapolis, MN, United States

1. State Grid Shaanxi Electric Power Company Construction Branch, Xi’an, China; 2. Xi’an Jiaotong University, Xi’an, China; 3. University of Sydney, Sydney, NSW, Australia

1. Oita University, Oita, Japan; 2. Wuhan University, Wuhan, China; 3. Saga University, Saga, Japan; 4. Durham University, Durham, United Kingdom

CS-12. 3D Simulations of Domain Wall Structure and Hysteresis in Cobalt Films With Columnar Defects. V.V. Zverev and I. Izmozherv

1. School of Electrical and Automation Engineering, East China JiaoTong University, Nanchang, China

1. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. School of Electronic Information and Artificial Intelligence, Shaanxi University of Science and Technology, Xi’an, China
Session DA

2D MATERIALS FOR SPINTRONICS

Hyunsoo Yang, Chair
National University of Singapore, Singapore

DA-01. Ultra-Thin Heusler Films and Lamellae That Host non-Collinear Spin Textures. (Invited) S. Parkin\textsuperscript{1,2} 1. NISE, Max Planck Institute for Microstructure Physics, Halle (Saale), Germany; 2. Martin-Luther-Universitat Halle-Wittenberg, Halle, Germany

DA-02. Spin-Orbit Torque in van der Waals Heterostructures of Magnetic Two-Dimensional Materials. (Invited) B. Nikolić
1. University of Delaware, Newark, DE, United States

DA-03. Spin-Orbit Proximity Phenomena in Van der Waals Heterostructures. (Invited) L.A. Benitez\textsuperscript{2}, W. Savero Torres\textsuperscript{2}, J.F. Sierra\textsuperscript{2}, M.V. Costache\textsuperscript{2}, J.H. Garcia\textsuperscript{2}, S. Roche\textsuperscript{1,2} and S.O. Valenzuela\textsuperscript{1,2} 1. Instituto Catalana de Recerca i Estudis Avancats, Barcelona, Spain; 2. Institut Catala de Nanociencia i Nanotecnologia, Bellaterra, Spain

DA-04. Optimization of Spin to Charge Transduction Efficiency for Magnetic State Readout. (Invited) T. Gosavi\textsuperscript{1}, E.S. Walker\textsuperscript{1}, K. Oguz\textsuperscript{1}, C. Lin\textsuperscript{1}, J. Plombon\textsuperscript{1}, H. Li\textsuperscript{1}, D.E. Nikonov\textsuperscript{1}, S. Clendenning\textsuperscript{1} and I.A. Young\textsuperscript{1} 1. Components Research, Intel Corp, Hillsboro, OR, United States

DA-05. Significant Dzyaloshinskii-Moriya Interaction in Two-Dimensional Janus Structures and its Electrically Control in 2D Magnetoelectric Multiferroics. (Invited) H. Yang\textsuperscript{1} 1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo 315201, China

DA-06. Electrical and Chemical Control of Magnetism in Layered Ferromagnetic Semiconductors. (Invited) G. Eda\textsuperscript{1} 1. National University of Singapore, Singapore
ON-DEMAND SESSIONS

Session DB
SPINS IN GRAPHENE OTHER 2D MATERIALS
Ivan Vera-Marun, Chair
The University of Manchester, Manchester, United Kingdom

DB-01. Magnetic Nano/Microfibres With Highly Oriented van der Waals CrI$_3$, Inclusions by Electrospinning. V. Bayzi Isfahani$^1$, J. Filipe Horto Belo da Silva$^2$, L. Bod dapati$^3$, A. Gomes Rolo$^1$, R. Maria Ferreira Baptista$^1$, F. Leonard Deepak$^1$, J. Pedro Esteves de Araújo$^2$, E. de Matos Gomes$^1$ and B. Gonçalves Almeida$^1$ 1. Centro de Física das Universidades do Minho e Porto, Departamento de Física, Universidade do Minho, Braga, Portugal; 2. FIMUP - Instituto de Físico de Materiais avançados, Nanotecnologia e Fotónica, Universidade do Porto, Universidade do Porto, Porto, Portugal; 3. Nanostructured Materials Group, International Iberian Nanotechnology Laboratory (INL), International Iberian Nanotechnology Laboratory, Braga, Portugal

DB-02. Spin Filtering Manipulation in WS$_2$-Based Magnetic Tunnel Junctions. V. Zatko$^1$, J. Peiro$^1$, M. Galbiati$^1$, S.M. Dubois$^2$, P. Brus$^3$, B. Servet$^1$, J. Charlier$^2$, M. Och$^4$, C. Mattevi$^4$, F. Godel$^1$, A. Vecchiola$^1$, K. Bouzehouane$^1$, S. Collin$^2$, F. Petroff$^1$, A. Fert$^1$, B. Dlubak$^2$ and P. Seneor$^1$ 1. Unite Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Universite catholique de Louvain, Louvain-la-Neuve, Belgium; 3. Thales Research and Technology France, Palaiseau, France; 4. Imperial College London, London, United Kingdom

DB-03. Spin Valves With Exfoliated 2D Materials: MoS$_2$. M. Galbiati$^{1,2}$, F. Godel$^2$, A. Vecchiola$^2$, V. Zatko$^2$, S. Tatay$^1$, R. Galceran$^2$, S. Mañas-Valero$^1$, M. Piquemal-Banci$^2$, M. Martin$^2$, A. Forment-Aliaga$^1$, E. Coronado$^1$, B. Dlubak$^2$ and P. Seneor$^2$ 1. Universitat de Valencia Institut de Ciencia Molecular, Paterna, Spain; 2. Unite Mixte de Physique CNRS/Thales, Palaiseau, France

DB-04. Intrinsic 2DXY Ferromagnetism in a van der Waals Monolayer Grown by Molecular Beam Epitaxy. A. Bedoya Pinto$^1$, J. Ji$^1$, A. Pandeya$^1$, P. Gargiani$^2$, M. Valvidares$^2$, P. Sessi$^1$, F. Radu$^1$, K. Chang$^1$ and S. Parkin$^1$ 1. Max-Planck-Institut fur Mikrostrukturphysik, Halle, Germany; 2. Consorcio para la Construcion Equipamiento y Explotacion del Laboratorio de Luz Sincrotron, Barcelona, Spain; 3. Helmholtz-Zentrum Berlin fur Materialien und Energie GmbH, Berlin, Germany; 4. Beijing Academy of Quantum Information Sciences, Beijing, China

DB-05. High Spin Hall Conductivity in Large-Area Type-II Dirac Semimetal PtTe$_2$. H. Xu$^1$, J. Wei$^1$, X. Han$^1$ and G. Yu$^1$ 1. Beijing National Laboratory for Condensed Matter Physics, Chinese Academy of Sciences, Beijing, China
DB-06. Coexistence of Topological and Rashba States in Ferroelectric SnTe. L. Nessi1, A. Novati1, M. Cantoni1, S. Cecchi1, G. Vinci2, D. Mondela, J. Fujii2, I. Vobornik2, R. Calarco3, R. Bertacco3, S. Piccozi2 and C. Rinaldi1. Epitaxy, Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany; 2. IOM-CNR, Istituto Officina dei Materiali Consiglio Nazionale delle Ricerche, Trieste, Italy; 3. CNR-IMM, Consiglio Nazionale delle Ricerche, Roma, Italy; 4. CNR-SPIN, Consiglio Nazionale delle Ricerche, Chieti, Italy; 5. Physics, Politecnico di Milano, Milano, Italy

DB-07. Bulk-Like Magnetic Moments in Epitaxial Two-Dimensional Superlattices. J. Sun1, S. Liu2,3, F. Xiu2,3 and W. Liu1 1. Electronic Engineering, Royal Holloway University of London, Egham, United Kingdom; 2. State Key Laboratory of Surface Physics and Department of Physics, Fudan University, Shanghai, China; 3. Institute for Nanoelectronic Devices and Quantum Computing, Fudan University, Shanghai, China

DB-08. Critical Fluctuations Induced g-Factor Anisotropy in the Two-Dimensional Ferromagnetic Insulators CrXSe3 (X=Si, Ge). Z. Li1,2, D. Xu1,2, X. Li1,2, H. Liao1,2, X. Xi1, Y. Yu1,4 and W. Wang1,2 1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. University of Chinese Academy of Sciences Education Foundation, Beijing, China; 3. Songshan Lake Library, Dongguan, China; 4. Wuhan Institute of Physics and Mathematics Chinese Academy of Sciences, Wuhan, China

DB-09. Spin-Orbit Driven Effects in Graphene-FM Systems. A. Gudín Holgado1,2, J.M. Diez1,2, P. Olleros-Rodríguez1, F. Ajejas1, A. Anadón1, I. Arnay1, R. Guerrero1, J. Camarero1,2, R. Miranda1,2 and P. Perna1 1. Nanoscience, Instituto Madrileño de Estudios Avanzados, Madrid, Spain; 2. Instituto Nicolás Cabrera & IFIMAC, Universidad Autonoma de Madrid, Madrid, Spain

DB-10. Room-Temperature Ferromagnetism in 2D vdW Fe3GeTe2 and its Potential Application. T. Nie1 1. Beihang University, Beijing, China

DB-11. Electrical Resistivity, Galvanomagnetic and Optical Properties of WTe2 Single Crystal. A. Domozhirova1, S. Naumov1, A. Makhnev1, E. Shreder1, S. Podgornykh1, E. Marchenko1, V. Chistyakov1, J. Huang2 and V. Marchenkov1,3 1. M.N. Mikheev Institute of Metal Physics, UB RAS, Ekaterinburg, Russian Federation; 2. National Cheng Kung University, Tainan, Taiwan; 3. Ural Federal University, Ekaterinburg, Russian Federation
ON-DEMAND SESSIONS

Session DC

SPINS IN TOPOLOGICAL INSULATORS AND 2D MATERIALS
Claudia Felser, Chair
Max-Planck-Gesellschaft, Dresden, Germany

DC-01. Magnetotransport and ARPES Studies of Large-Area Sb$_2$Te$_3$ and Bi$_2$Te$_3$ Topological Insulators Grown by MOCVD on Si.


DC-02. Role of Ising Superconductivity in the Transition-State Enhancement of Magnon Spin to Quasiparticle Charge Conversion Efficiency.

K. Jeon, K. Cho, A. Chakraborty, J. Jeon, J. Yoon, H. Han and S. Parkin. 1. Max Planck Institute of Microstructure Physics, Halle / Saale, Germany

DC-03. Room Temperature Nonlinear Hall Effect and Wireless RF Rectification in Weyl Semimetal TaIrTe$_4$.

D. Kumar, C. Hsu, R. Sharma, T. Chang, P. Yu, J. Wang, G. Eda, G. Liang and H. Yang. 1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore; 2. National Cheng Kang University, Tainan, Taiwan; 3. Center for Quantum Frontiers of Research & Technology (QFort), National Cheng Kang University, Tainan, Taiwan; 4. State Key Laboratory of Optoelectronic Materials and Technologies, School of Materials Science and Engineering, Sun Yat-Sen University, Guangzhou, China; 5. Centre for Advanced 2D Materials, National University of Singapore, Singapore; 6. Department of Physics, National University of Singapore, Singapore

DC-04. Charge Spin Conversion in Topological Materials and Heterostructures. (Invited)

S.P. Dash. 1. Microtechnology and Nanoscience, Chalmers University of Technology, Gothenburg, Sweden


J. Jiang and W. Mi. 1. Department of Applied Physics, Tianjin University, Tianjin, China

DC-06. Anomalous Transport in Magnetic Topological Materials.

Y. Sun, E. Liu, J. Noky, Q. Xu, L. Muechler, K. Manna, S. Guin, J. Brink and C. Felser. 1. Max-Planck-Institut für Chemische Physik fester Stoffe, Dresden, Germany; 2. Chinese Academy of Sciences Institute of Physics, Beijing, China; 3. The Flatiron Institute, New York, NY, United States; 4. Leibniz-Institut für Festkörperforschung Dresden eV, Dresden, Germany
DC-07. **Nonlinear Anomalous Hall Effect in van der Waals Ferromagnet.** J. Zhou and J. Charlier. 1. Institute of Condensed Matter and Nanosciences, Universite catholique de Louvain, Louvain-la-Neuve, Belgium

DC-08. **Tunable Electronic and Magnetic Properties of Two-Dimensional Janus Magnetic Materials.** R. Li, H. Bai and W. Mi. 1. Department of Applied Physics, Tianjin University, Tianjin, China


DC-10. **Direct Observation of Tunable Magnetic Domains in Noncentrosymmetric Ferromagnetic Weyl Semimetal CeAlSi.** B. Xu, J.D. Franklin, A. Jayacody, H. Yang, F. Tafiri and I. Sochnikov. 1. Physics, University of Connecticut, Storrs, CT, United States; 2. Physics, Boston College, Chestnut Hill, MA, United States.

DC-11. **Unidirectional Spin-Hall Magnetoresistance in HgTe Topological Insulator - Ferromagnet Heterostructures.** C. Grezes, J. Papin, M. Cosset-Cheneau, P. Noël, Y. Fu, A. Brenac, P. Ballet and T. Meunier. 1. CEA Grenoble, SPINtronique et Technologie des Composants, Grenoble, France; 2. Institut NEEL, Grenoble, France; 3. ETH Zurich, Zurich, Switzerland; 4. CEA Grenoble, LETI, Grenoble, France.


ON-DEMAND SESSIONS

Session DD

MAGNETISM IN CURVILINEAR AND CYLINDRICAL GEOMETRIES

Oksana Chubykalo-Fesenko, Chair
Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain

DD-01. Curvilinear Magnetism. (Invited) D.D. Sheka¹ 1. Faculty of Radiophysics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

DD-02. Micromagnetic Description of Symmetry-Breaking Effects in Curvilinear Ferromagnetic Shells. D.D. Sheka¹, O. Pylypovskyi²,³, P. Landeros⁴,⁵, A. Kakay² and D. Makarov² 1. Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. Kyiv Academic University, Kyiv, Ukraine; 4. Universidad Tecnica Federico Santa Maria, Valparaiso, Chile; 5. Center for the Development of Nanoscience and Nanotechnology (CEDENNA), Santiago, Chile

DD-03. Magnetic Phase Diagrams and Helicity Control of Reversal Modes in Ferromagnetic Nanotubes. H. Salinas¹, J. Restrepo¹ and O. Iglesias²,³ 1. Instituto de Física, Universidad de Antioquia, Medellin, Colombia; 2. Condensed Matter Physics, Universitat de Barcelona, Barcelona, Spain; 3. IN2UB, Barcelona, Spain

DD-04. Spin-Polarised Current Bloch Point Manipulation. M. Beg¹, M. Lang¹ and H. Fangohr²,³ 1. Faculty of Engineering and Physical Sciences, University of Southampton, Southampton, United Kingdom; 2. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany

DD-05. Time Resolved Imaging of ΩRsted Field Induced Magnetization Dynamics in Cylindrical Magnetic Nanowires. M. Schöbitz¹,², S. Finizio³, A. De Riz¹, J. Hurst¹, J. Toussaint¹, C. Thirion¹,², D. Gusakova¹, J. Bachmann², J. Raabe³ and O. Fruchart¹ 1. SPIritronique et Technologie des Composants, Grenoble, France; 2. Inorganic Chemistry, Friedrich-Alexander-Universitat Erlangen-Nurnberg, Erlangen, Germany; 3. Paul Scherrer Institut, Villigen, Switzerland; 4. Institut NEEL, Grenoble, France

DD-06. Mechanism of Current-Assisted Bloch-Point Wall Stabilization for Ultra Fast Dynamics. A. De Riz¹, J. Hurst¹, M. Schöbitz¹,², C. Thirion¹, J. Bachmann¹,², J. Toussaint¹, O. Fruchart¹ and D. Gusakova¹ 1. Univ. Grenoble Alpes, CNRS, CEA, IRIG-SPINTEC, Grenoble, France; 2. Friedrich-Alexander-Universitat Erlangen-Nurnberg, Erlangen, Germany; 3. Neel Institute, Univ. Grenoble Alpes, CNRS, Grenoble, France; 4. Institute of Chemistry, St. Petersburg State University, St. Petersburg, Russian Federation
DD-07. Micromagnetics of Chemical Barriers Inserted Within Permalloy Cylindrical Nanowires: Towards the Control of Domain Wall Motion. L. Álvaro Gómez1,2, M. Schöbitz1, C. Fernández González2,3, S. Ruiz Gómez4, I. Andersen5, N. Mille6, J. Hurst1, M. Foerster6, L. Aballe6, R. Belkhou5, J. Toussaint6, L. Cagnon4, C. Thirion6, A. Masseboeuf6, D. Gusakova1, L. Pérez García6,7 and O. Fruchart1
1. SPIritronique et Technologie des Composants, Grenoble, France; 2. Fundacion IMDEA Nanociencia, Madrid, Spain; 3. Física de Materiales, Universidad Complutense de Madrid, Madrid, Spain; 4. Institut NEEL, Grenoble, France; 5. Synchrotron SOLEIL, Gif-sur-Yvette, France; 6. Sincrotron ALBA, Barcelona, Spain; 7. Centre d’Elaboration de Matériaux et d’Etudes Structurales, Toulouse, France

DD-08. Theoretical Study of Current Induced Domain Wall Motion in Magnetic Nanotubes With Azimuthal Magnetization. J. Hurst1, A. De Riz1, M. Stano2, J. Toussaint3, O. Fruchart1 and D. Gusakova1
1. SPINtronique et Technologie des Composants, Grenoble, France; 2. Stredoevropsky technologicky institut, Brno, Czechia; 3. Institut NEEL, Grenoble, France

DD-09. Dynamic State Transitions in Vortex-Based Magnetic Tunnel Junctions for High Frequency Data Transmission. A. Jenkins1, L. San Emeterio Alvarez1, L. Benetti1, L. Martins1, P.P. Freitas1 and R. Ferreira1
1. Spintronics, International Iberian Nanotechnology Laboratory, Braga, Portugal

DD-10. Heusler-Compound Nanocontact Vortex Oscillators. J. Létang1, C. de Melo2,3, C. Guillemard2,4, A. Vecchiola4, S. Petit-Watelot1, M. Yool, T. Devolder1, K. Bouzehouane5, V. Cros5, S. Andreic6 and J. Kim1
1. Centre de Nanosciences et de Nanotechnologies, Orsay, France; 2. Laboratoire Materiaux Optiques Photonique et Systemes, Metz, France; 3. Synchrotron SOLEIL, Gif-sur-Yvette, France; 5. Unite Mixte de Physique CNRS/Thales, Palaiseau, France

ON-DEMAND SESSIONS

Session DE
MULTIFERROICS AND MAGNETOELECTRIC MATERIALS
Julius de Rojas, Chair
Universitat Autonoma de Barcelona, Barcelona, Spain

DE-01. The Crucial Role of Stoichiometry to get Ultra-low Magnetic Damping in Heusler Compounds. S. Andrei1, C. Guillemard1,2, S. Petit-Watelot1 and F. Bertran1
1. Institut Jean Lamour, universite de lorraine, Nancy, France; 2. ALBA synchrotron, Barcelona, Spain; 3. SOLEIL synchrotron, Saint Aubin, France

DE-02. Electronic Transport Properties of Antiperovskite MnN Epitaxial Films. Z. Zhang1 and W. Mi1
1. Department of Applied Physics, Tianjin University, Tianjin, China
DE-03. Transport Properties of Co$_3$MnSi Heusler Compounds. C. de Melo$^{1,2}$, C. Guillermard$^{1,3}$, V. Palini$,^1$ J. Rojas-Sanchez$^1$, S. Petit-Watelot$^1$ and S. Andrieu$^1$ 1. Institut Jean Lamour, Nancy, France; 2. Laboratoire Materiaux Optiques Photонique et Systèmes, Metz, France; 3. Synchrotron SOLEIL, Gif-sur-Yvette, France

DE-04. Enhancement of the Anomalous Nernst Effect in Polycrystalline Co$_3$MnGa/AlN Multilayers. J. Wang$^{1,2}$, Y. Lau$^{1,2}$, W. Zhou$^1$, T. Seki$^1$, Y. Sakuraba$^{1,4}$, T. Kubota$^{1,2}$, K. Ito$^{1,2}$ and K. Takanashi$^{1,2}$ 1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. CSRN, Tohoku University, Sendai, Japan; 3. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 4. PRESTO, Japan Science and Technology Agency, Tokyo, Japan

DE-05. Enhancement of L$_2$$_1$-Atomic Order and Spin-Polarization in Co$_3$Mn$$_i$(Z = Ge, Sn) Heusler Thin Films by low-Temperature Annealing Process. V.K. Kushwaha$^1$, Y. Sakuraba$^1$, T. Nakatani$^1$, T. Sasaki$^1$, I. Kurniawan$^1$ and K. Hono$^1$ 1. Research Center for Magnetic and Spintronic Materials, National Institute for Material Science, Tsukuba, Japan


DE-07. Interfacial Corrugation and Magnetism of Freestanding LaMnO$_3$+$\delta$ Thin Films. Q. Lu$^1$, P.P. Balakrishnan$^2$, A. Grutter$^2$ and X. Zhai$^3$ 1. University of Science and Technology of China Hefei National Laboratory for Physical Sciences at the Microscale, Hefei, China; 2. NIST Center for Neutron Research, Gaithersburg, MD, United States; 3. ShanghaiTech University School of Physical Science and Technology, Shanghai, China

DE-08. Ferromagnetism in C-Doped ZnO Powder: the Role of Oxygen Vacancies and Carbon Defects. S. Akbar$^{1,2}$, S. S. K. Hasanain$^{1,2}$, M. Jamii$^3$, G. Jaffari$^1$, S. Shah$^4$ and P. Rudolf$^2$ 1. Katholieke Universiteit Leuven, Leuven, Belgium; 2. Dep. Física e Astronomia, Universidade do Porto Instituto de Física dos Materiais Instituto de Nanociencia e Nanotecnologia, Porto, Portugal; 3. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 4. COMSTECH Secretariat, Islamabad, Pakistan

DE-09. Electronic Properties and Electronic Structure of Co$_3$Y$_i$(Y = Ti, v, Cr, Mn, Fe, Co, Ni) Heusler Alloys. A. Semiannikova$^1$, Y. Perevozchikova$^1$, A. Lukoyanov$^{1,2}$, E. Shreder$^1$, A. Makhnev$^1$, P. Rudolf$^2$ and P. Rudolf$^2$. 1. Institut fíziki metallov imeni M N Miheeva Rossiskoj akademii nauk, Ekaterinburg, Russian Federation; 2. Ural’skij federal’nyj universitet imeni pervogo Prezidenta Rossi B N El cina, Ekaterinburg, Russian Federation

76 Monday
Session DF
MULTIFERROICS AND MAGNETOELECTRIC PHENOMENA
Pan He, Chair
Fudan University, Shanghai, China


DF-03. Magneto-Ionic Effect in Iron Triad Nanostructures With Different Shapes and Composition. M. Kutuzau1, M. Nichterwitz2,3, S. Honnali1, D. Wolf2, S. Schneider2, K. Nielsch1,4 and K. Leistner5 1. Leibniz-Institut für Festkörper- und Werkstofforschung Dresden eV, Dresden, Germany; 2. Physical Chemistry, Technische Universität Dresden, Dresden, Germany; 3. Dresden Center for Nanoanalysis, Technische Universität Dresden, Dresden, Germany; 4. Institute of Material Science, Technische Universität Dresden, Dresden, Germany

DF-04. The Impact of Stress on the Magnetoelectric Coupling Between a Multilayered Ferromagnet and a Ferroelectric Single Crystal. L. Garten1, K. Bussmann1, P. Finkel1 and M. Staruch1 1. US Naval Research Laboratory, Washington, DC, United States

in-Situ Single Crystal Synchrotron X-ray Diffraction Study on the Structure of Multiferroic Antiferromagnet Ba$_3$MnGe$_2$O$_7$ From low- to High-Temperature. R. Dutta$^1$, H. Thoma$^2$, D. Vadim$^3$, D. Chernyshov$^3$, B. Nafradi$^4$, T. Masuda$^5$ and V. Hutanu$^6$ $^1$, Institute of Crystallography, RWTH Aachen University and Julich Centre for Neutron Science (JCNS) at Heinz Maier-Leibnitz Zentrum (MLZ), 85748, Garching, Germany; 2. Julich Centre for Neutron Science (JCNS) at Heinz Maier-Leibnitz Zentrum (MLZ), 85748, Garching, Germany; 3. Swiss-Norwegian Beam Lines at ESRF, rue Jules Horowitz, FR-38042, Grenoble Cedex 9, France; 4. Ecole Polytechnique Federale de Lausanne, Laboratory of Nanostructures and Novel Electronic Materials, 1015 Lausanne, Swaziland; 5. International Graduate School of Arts and Sciences, Yokohama City University, Yokohama, Kanagawa 236-0027, Japan

Magnetoelectric Excitations in the Polar Antiferromagnets Ni-Based Tellurates $\delta_{\alpha}B_{\alpha}TeO_6$ ($\alpha$, $B$ = Ni, Mn, Co, x=1-2). S. Skiadopoulou$^{1,2}$, M. Retuerto$^3$, F. Borodavka$^2$, C. Kadlec$^2$, F. Kadlec$^2$, M. Greenblatt$^3$ and S. Kamba$^2$ $^1$. School of Physics, CRANN, Trinity College Dublin Faculty of Engineering Mathematics and Science, Dublin, Ireland; 2. Dielectrics, Institute of Physics of the Czech Academy of Science, Praha, Czechia; 3. Chemistry and Chemical Biology, Rutgers The State University of New Jersey, New Brunswick, NJ, United States

New Insight About the Magnetic Order in Peculiar Multiferroic Ba$_2$CoGe$_2$O$_7$ by Revealing the Sign of the Dzyaloshinskii-Moriya Interaction by Polarized Neutron Diffraction. H. Thoma$^1$ and V. Hutanu$^{1,2}$ 1. Jülich Centre for Neutron Science (JCNS) at Heinz Maier-Leibnitz Zentrum (MLZ), Forschungszentrum Julich GmbH, Garching, Germany; 2. Institute of Crystallography, Rheinisch-Westfälische Technische Hochschule Aachen, Aachen, Germany

Magnetic Phases and Chirality Control in Magnetic Multiferroics Nd$_{3-x}$TB$_x$Mn$_2$O$_7$ by the Neutron Scattering. I. Zobkalo$^1$, S. Gavrilov$^1$, A. Matveeva$^1$, A. Sazonov$^{2,4}$, S. Barilo$^3$ and V. Hutanu$^{2,4}$ 1. Condensed Matter Research Department, FGBU Petersburg Nuclear Physics Institute named after B P Konstantinov, Gacina, Russian Federation; 2. Institute of Crystallography, RWTH Aachen University, Aachen, Germany; 3. Scientific-Practical Materials Research Centre NAS of Belarus, Minsk, Belarus; 4. Jülich Centre for Neutron Science at Heinz Maier-Leibnitz Zentrum, Garching, Germany

Enhanced Strain-Induced Magnetoelectric Coupling in Polarization-Free Fe/BaTiO$_3$ Heterostructures. C. Amorim$^1$, J.S. Amaral$^1$ and V.S. Amaral$^1$ 1. Universidade de Aveiro CICECO, Aveiro, Portugal

Magnetoelectric Coupling and Spin-Canting in FeCr$_2$O$_4$ Ferrimagnet. K. Vasin$^1$ and M. Eremin$^1$ 1. Department of Quantum Electronics and Radiospectroscopy, Kazan Federal University Institute for Physics, Kazan, Russian Federation
ON-DEMAND SESSIONS

Session DG

SPIN LIQUIDS AND NOVEL SPIN SYSTEMS
Shawn Pollard, Chair
The University of Memphis, Memphis, TN, United States

DG-01. Micromagnetic Simulations of Magnetization Reversal in Kagome Artificial Spin ice. B.M. Cecchi, M.F. Velo and K. Pirota. Universidade Estadual de Campinas Instituto de Fisica Gleb Wataghin, Campinas, Brazil

DG-02. Withdrawn


DG-05. Withdrawn

Two Magnetic Compensation Compositions in Mn$_{4-x}$Co$_x$N Epitaxial Films at Room Temperature Proved by X-ray Magnetic Circular Dichroism. H. Mitarai$^1$, T. Komori$^1$, T. Hirose$^1$, K. Itô$^{2,3}$, K. Toko$^1$, L. Vila$^4$, J. Attané$^4$, K. Amemiya$^5$ and T. Suemasu$^1$

$^1$Inst. of Appl. Phys., Univ. of Tsukuba, Tsukuba, Japan; $^2$IMR, Tohoku Univ., Sendai, Japan; $^3$CSRNU, Tohoku Univ., Sendai, Japan; $^4$Univ. Grenoble Alpes, CEA, CNRS, Spintec, Grenoble, France; $^5$IMSS, KEK, Tsukuba, Japan

Surprises in the Phase Diagram of two Impurities on Flat-Band Hosts Coupled by Genuine RKKY Interaction. K.P. Wójcik$^{1,2}$ and J. Kroha$^1$

$^1$Physikalisches Institut, Rheinische Friedrich-Wilhelms-Universität Bonn, Bonn, Germany; $^2$Institute for Molecular Physics, Polish Academy of Sciences, Poznan, Poland

Anomalous Electronic and Magnetic Properties of Noncentrosymmetric YbCoC$_2$. D. Salamatin$^1$, N. Martin$^2$, V. Sidorov$^1$, N. Chtchelkatchev$^1$, M. Magnitskaya$^1$, J. Guo$^3$, C. Huang$^2$, L. Sun$^3$ and A. Tsyshchenko$^1$

$^1$Institute for High Pressure Physics RAS, Troitsk, Russian Federation; $^2$Commissariat a l‘energie atomique et aux energies alternatives Sieg administratif, Gif-sur-Yvette, France; $^3$Chinese Academy of Sciences Institute of Physics, Beijing, China


$^1$School of Mathematics and Physics, Queen’s University Belfast, Belfast, United Kingdom; $^2$University College Dublin College of Science, Dublin, Ireland

Dynamical Freezing in an Artificial Kagome Ice Magnet. N. Rougemaille$^1$, V. Schanilec$^1$ and B. Canals$^1$

$^1$Institut NEEL, Grenoble, France

Effect of Mixing the low-Valent Transition Metal Atoms Y = Sc, Ti, v, Cr, Mn and Fe on the Properties of Quaternary Heusler Compounds Co$_{2-x}$Y$_x$FeSi (0≤x≤1). R. Mahat$^1$, S. KC$^1$, U. Karki$^2$, J. Law$^2$, V. Franco$^2$, I. Galanakis$^3$, A. Gupta$^4$ and P. LeClair$^1$

$^1$Physics and Astronomy, The University of Alabama, Tuscaloosa, AL, United States; $^2$Dpto. Fisica de la Materia Condensada ICMSE-CSIC, Universidad de Sevilla, Sevilla, Spain; $^3$Department of Materials Science, University of Patras, Patras, Greece; $^4$Department of Chemistry and Biochemistry, The University of Alabama, Tuscaloosa, AL, United States

ON-DEMAND SESSIONS

Session DP

MULTIFERROICS AND MAGNETOELECTRICS: PHENOMENA, MATERIALS AND TRANSPORT
(Poster Session)

Stella Skiadopoulos, Chair
The University of Dublin Trinity College, Dublin, Ireland

Effect of Mixing the low-Valent Transition Metal Atoms Y = Sc, Ti, v, Cr, Mn and Fe on the Properties of Quaternary Heusler Compounds Co$_{2-x}$Y$_x$FeSi (0≤x≤1). R. Mahat$^1$, S. KC$^1$, U. Karki$^2$, J. Law$^2$, V. Franco$^2$, I. Galanakis$^3$, A. Gupta$^4$ and P. LeClair$^1$

$^1$Physics and Astronomy, The University of Alabama, Tuscaloosa, AL, United States; $^2$Dpto. Fisica de la Materia Condensada ICMSE-CSIC, Universidad de Sevilla, Sevilla, Spain; $^3$Department of Materials Science, University of Patras, Patras, Greece; $^4$Department of Chemistry and Biochemistry, The University of Alabama, Tuscaloosa, AL, United States
DP-02. Observation of Room-Temperature Magnetoresistance in Graphene/CoFe2O4 Nanocomposite. S. Roy1,2, I. Sivakumar2, F. Francis2, V. G. V.2 and A. Subramanian1 1. Manipal Academy of Higher Education, Manipal, India; 2. Centre for Nano and Soft Matter Sciences, Bangalore, India

DP-03. Highly Nonlinear Magnetoelectric Effect in Buckled Honeycomb Antiferromagnetic Co9Ta2O27. N. Lee1, D. Oh1, S. Choi1, J. Moon1, J. Kim1, H. Shin1, K. Son1, J. Nuss2, V. Kiryukhin3 and Y. Choi1 1. Department of Physics, Yonsei University, Seodaemun-gu, The Republic of Korea; 2. Max Planck Institute for Solid State Research, Stuttgart, Germany; 3. Department of Physics and Astronomy, Rutgers The State University of New Jersey, New Brunswick, NJ, United States; 4. Max-Planck-Institut fur Intelligente Systeme, Stuttgart, Germany

DP-04. Polarity Dependence of Change in Electric Polarization (Magnetization) Induced by Magnetic (Electric) Fields in CaBaM4O7(M=Co, Fe) Single Crystals. T. Shirasaki1, H. Endo1, M. Noda2, M. Akaki2, H. Kuroe1 and H. Kuwahara1 1. Phys.Div., Jochi University, Chiyoda-ku, Japan; 2. Molecular Photoscience Research Center, Kobe University, Kobe, Japan

DP-05. Anisotropic and Nonlinear Magnetodielectric Effects in Orthoferrite ErFe3O Single Crystals. H. Shin1, D. Oh1, J. Kim1, Y. Choi1 and N. Lee1 1. Physics, Yonsei University, Seodaemun-gu, The Republic of Korea

DP-06. Structural and Electromagnetic Characteristics of La-Sr Manganite With Paired Substitution of Zn and Ti for Manganese Depending on Oxygen Content. V. Karpasyuk1, A. Badelin1, Z. Datskaya1, I. Derzhavin1 and S. Estemirova2,1 1. Astrakhan State University, Astrakhan, Russian Federation; 2. Institute for Metallurgy UrO RAN, Ekaterinburg, Russian Federation

DP-07. Withdrawn

DP-08. High-Temperature Martensitic Transformation in Pr-Sr Manganites. Y.E. Samoshkina1, M.V. Rautskii1, D.S. Neznakhin1, E. Stepanova1, N. Andreev1 and V. Chichkov1 1. Federal Research Center KSC SB RAS, Kirensky Institute of Physics, Krasnoyarsk, Russian Federation; 2. Ural Federal University, Institute of Natural Sciences and Mathematics, Yekaterinburg, Russian Federation; 3. National Research Technological University “MISIS”, Moscow, Russian Federation

DP-09. Effects of a Molecular C60 Interfaces on the Spin Hall Magnetoresistance of YIG/PtMn. S. Alotibi1, B. Hickey1, M. Ali1 and O. Céspedes1 1. University of Leeds, Leeds, United Kingdom

DP-10. Magneto-Transport Study on Topological Chiral Semimetal CoSi. S. Monga1, R. Rawat1 and R.K. Gopal1 1. Indian Institute of Science Education and Research Mohali, Mohali, India
DP-11. Explore the Large Bohr-Magneton on a Half-Heusler BeMnN. R. Zhang1, Y. Zeng2, X. She1, Y. Zou1, R. Huang1 and C. Fong1. 1. Nanjing University, Nanjing, China; 2. Hangzhou Dianzi University, Nanjing, China; 3. University of California Davis, Davis, CA, United States

DP-12. Strain Modulated Structure Distortion and Magnetic Properties of Orthorhombic LuMnO3 Thin Films. A. Zhang1, H. Cao1, Y. Tang1 and X. Wu2. 1. Hohai University, Nanjing, China; 2. Nanjing University, Nanjing, China

ON-DEMAND SESSIONS

Session DQ

INTERACTIONS IN COMPLEX MAGNETS
(Poster Session)

Hao Deng, Chair
Rheinisch-Westfälische Technische Hochschule Aachen, Garching, Germany


DQ-02. Non Magnetic-Magnetic Transition in \( \text{Cr}_3\text{A(a=as,Ga)} \) and Thier Transition Metal Doped Compounds. H.K. Krarcha1 and A. Ferroudj2. 1. Earth Sciences and Universe Institute, Universite Batna 2, Fesdis, Algeria; 2. Department of physics, Universite Batna 2, Fesdis, Algeria

DQ-03. Phase States and Critical Properties of a Dilute Magnet With Frustration. D. Yasinskaya1, V. Ulitko1, Y. Panov1 and A. Moskvin1. 1. Institute of Natural Sciences and Mathematics, Ural'skij federal'nyj universitet imeni pervogo Prezidenta Rossii B N El'cina, Ekaterinburg, Russian Federation

DQ-04. Specific Heat of \( \text{YbMn}_5\text{Ge}_6\text{Sn}_x \) Compounds. P. Haraux1, L. Eichenberger1, L. Diop1 and T. Mazet1. 1. Institut Jean Lamour, Nancy, France

DQ-05. Exact Spin Dynamics of High Spin Nanoscale Molecular Magnetic Clusters. O. Ciftja1. 1. Physics, Prairie View A&M University, Prairie View, TX, United States

DQ-06. Structural and Magnetic Properties of Cathode Materials Substituted With Transition Metal Based on \( \text{NaFeO}_2 \). S. Jung1, H. Choi1 and C. Kim1. 1. Department of physics, Kookmin University, Seongbok-gu, The Republic of Korea
DQ-07. Synthesis, Structural, and Mössbauer Studies of Favorable LiFePO4F Cathode Material. H. Choi1, S. Jung2 and C. Kim1
1. Department of Physics, Kookmin University, Seoul, The Republic of Korea

DQ-08. Magnetic Properties of Quasi-Two-Dimensional Oxyborates (Ni,Cu)2MnBO5 With Ludwigite Structure. S.N. Sofronova1, E. Moshkina1, E. Eremin1 and M. Molokeev1. I. V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russian Federation

DQ-09. Signatures of Long Range Dipolar Interactions in Artificial Square ice. O. Brunn1,2, Y. Perrin1, B. Canals1 and N. Rougemaille1. 1. Institut NEEL, Grenoble, France; 2. Institute for Scientific Instruments, Czech Academy of Science, Brno, Czechia


DQ-11. Are Field Demagnetized, Athermal, Artificial Square ice Magnets Stochastic Systems? O. Brunn1,2, B. Canals1 and N. Rougemaille1. 1. Institut NEEL, Grenoble, France; 2. Institute for Scientific Instruments, Czech Academy of Science, Brno, Czechia
From Spin-Resolved Atomic-Resolution Imaging to Magnetic Materials and Devices by Design. (Invited) R. Wiesendanger\(^1\) 1. Dept. of Physics, Universitat Hamburg, Hamburg, Germany

WEDNESDAY 5:00 PM EUROPE CEST

Session EA

**SPIN ANGULAR MOMENTUM TRANSPORT: SPIN WAVES PUSHING NEW FRONTIERS**

Timo Kuschel, Co-Chair
Bielefeld University, Bielefeld, Germany
Matthias Althammer, Co-Chair
Walther-Meißner-Institut, Garching, Germany

EA-01. Non-Stationary Thickness Profiles of Spin Wave Modes Propagating in Obliquely Magnetized Magnetic Films. (Invited) C. Trevillian\(^1\), V. Tyberkevych\(^1\) and A.N. Slavin\(^1\)
1. Physics, Oakland University, Rochester, MI, United States

EA-02. Spin Waves and Spin Currents. (Invited) S. Demokritov\(^1\), B. Divinskiy\(^1\), I. Borisenko\(^1\), V.E. Demidov\(^3\) and S. Urazhdin\(^2\)
1. Institute for Applied Physics, Westfalische Wilhelms-Universitat Munster, Munster, Germany; 2. Emory University, Atlanta, GA, United States

EA-03. Pure Spin Current and Spin Hall Effect in Antiferromagnetic Insulators. (Invited) K. Shen\(^1\) 1. Department of Physics, Beijing Normal University, Beijing, China

EA-04. Long Range Coupling of Magnetic Bilayers by Coherent Phonons. (Invited) K. An\(^1\), A. Litvinenko\(^1\), R. Kohno\(^1\), A. Fuad\(^1\), R. Lopes Seeger\(^1\), V.V. Naletov\(^1,2\), L. Vila\(^1\), U. Ebels\(^1\), G. de Loubens\(^1\), H. Hurdequint\(^2\), N. Beaulieu\(^3\), J. Ben Youssef\(^3\), N. Vukadinovic\(^5\), G.E. Bauer\(^6\), A.N. Slavin\(^1\), V. Tyberkevych\(^7\) and O. Klein\(^1\)
1. Université Grenoble Alpes, CEA, CNRS, Grenoble INP, Spintec, Grenoble, France; 2. Institute of Physics, Kazan Federal University, Kazan, Russian Federation; 3. Service de Physique de l’Etat Condense, Gif Sur Yvette, France; 4. Laboratoire des Sciences et Techniques de l’Information de la Communication et de la Connaissance, Brest, France; 5. Dassault Aviation, Saint-Cloud, France; 6. Institute for Materials Research and WPI-AIMR and CSR, Tohoku University, Tohoku, Japan; 7. Oakland University, Rochester, MI, United States

EA-05. Spin Waves in YIG-Semiconductor Heterostructures. (Invited) S. Nikitov\(^1,2\) and M. Morozova\(^1,3\)
1. Kotelnikov Institute of Radioengineering and Electronics of the Russian Academy of Sciences, Moscow, Russian Federation; 2. Moscow Institute of Physics and Technology National Research University, Dolgoprudny, Russian Federation; 3. N. G. Cernysevskogo Saratov National State Research University, Saratov, Russian Federation
ON-DEMAND SESSIONS

Session EB
FUNDAMENTAL MAGNONIC PHENOMENA
Benjamin Jungfleisch, Chair
University of Delaware, Newark, DE, United States

EB-01. Curvilinear Antiferromagnetism: Current State and Perspectives. (Invited) O. Pylypovskyi1,2
1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Kyiv Academic University, Kyiv, Ukraine

EB-02. Strongly Nonlinear Ferromagnetic Resonance of Bi-Doped YIG Nanodisks. I. Ngouagnia Yemeli1, D. Gouéré2, H. Merbouche2, T. Srivastava2, H. Hurdequint1, V. Cros2, M. Muñoz3, S. Sangiao4, J. De Teresa4, O. Klein5, A. Anane1 and G. de Loubens1. Service de Physique de l’Etat Condense, Gif Sur Yvette, France; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 3. Instituto de Micro y Nanotecnologia (CNM-CSIC), Madrid, Spain; 4. Universidad de Zaragoza Departamento de Fisica de la Materia Condensada, Zaragoza, Spain; 5. SPINtronique et Technologie des Composants, Grenoble, France

EB-03. Observation of Higgs and Goldstone Spin-Wave Modes in Weak Magnetic Stripes. M. Grassi1, M. Geilen2, K. Ait Oukaci3, Y. Henry1, D. Lacour3, D. Stoeffler1, M. Hehn3, P. Pirro2 and M. Bailleul1
1. Institut de Physique et Chimie des Matériaux de Strasbourg, CNRS, Université de Strasbourg, Strasbourg, France; 2. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 3. Institut Jean Lamour, CNRS, Université de Lorraine, Nancy, France

EB-04. Space-Quasiperiodic and Time-Chaotic Parametric Patterns in a Magnonic Quasicrystal Active Ring Resonator. S.V. Grishin1, O.I. Moskalenko1, A.N. Pavlov1, D.V. Romanenko1, A.V. Sadovnikov1, Y.P. Sharaevskii1, I.V. Sysoev1, T.M. Medvedeva2, E.P.Seleznov1 and S. Nikitov1
1. N. G. Cernyevskogo Saratov National State Research University, Saratov, Russian Federation; 2. Institute of Higher Nervous Activity and Neurophysiology, Moscow, Russian Federation; 3. V. A. Kotel’nikova Institute of radiotechnology and electronics of the Russian Academy of Science in Saratov, Saratov, Russian Federation; 4. V. A. Kotel’nikova Institute of radiotechnology and electronics of the Russian Academy of Science in Moscow, Moscow, Russian Federation

EB-05. Phase Noise Considerations in Magnon Based Parametric Excitations. A. Venugopalo1 and R. Victoria1
1. Department of Electrical Engineering and Computer Science, University of Minnesota, Minneapolis, MN, United States
EB-06. Bosonic Bott Index and Disorder-Induced Topological Transitions of Magnons. X. Wang1, A. Brataas2 and R. Troncoso2 1. Hunan University, Changsha, China; 2. Norwegian Technical and Natural Sciences University, Trondheim, Norway

EB-07. Inelastic Scattering of Spin Wave Beam at the Edge Localized Spin Waves and Second Harmonic Generation of Spin Waves. P. Gruszecki1, K. Guslienko2,3, I. Lyubchanskii4,5 and M. Krawczyk1 1. Faculty of Physics, Adam Mickiewicz University in Poznan, Poznan, Poland; 2. Depto. Fisica de Materiales, Universidad del Pais Vasco UPV/EHU, San Sebastian, Spain; 3. IKERBASQUE, The Basque Foundation for Science, Bilbao, Spain; 4. Donets Institute for Physics and Engineering (branch in Kharkiv) of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine; 5. Faculty of Physics, V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

EB-08. Evolution of Room-Temperature Magnon gas Toward Coherent Bose-Einstein Condensate. T.B. Noack1, V.I. Vasyuchka1, A. Pomyalov2, V.S. L’vov2, A.A. Serga1 and B. Hillebrands1 1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Department of Chemical and Biological Physics, Weizmann Institute of Science, Rehovot, Israel

EB-09. Investigation of Caustic Spin Wave Beams in Soft Thin Films. A. Wartelle1, T. Taniguchi1 and C.H. Back1 1. Technische Universität Munchen, Munchen, Germany

EB-10. A Model for Description of Linear Properties and Stability of Bose-Einstein Condensate of Magnons at Room Temperature. P. Artemchuk1, V. Tyberkevych1 and A.N. Slavin1 1. Department of Physics, Oakland University, Rochester, MI, United States

EB-11. Effect of the Local Exchange Invariance on the Magnetization Dynamics in a Ferromagnet. P. Ansalone1, S. Perma2, C. Serpico2, M. d’Aquino2, V. Scalera2 and V. Basso1 1. Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 2. Universita degli Studi di Napoli Federico II, Napoli, Italy

EB-12. Stationary State of Bose-Einstein Condensate of Magnons: Theory and Experiment. G. Li1, H. Jia1 and V. Pokrovsky1 1. Department of Physics and Astronomy, Texas A&M University System, College Station, TX, United States

EB-13. Novel Transport Properties of Viscous-Fluid Type Magnon in Magnetic Thin Film. Y. Li1, Y. Wang1 and J. Zhang1 1. School of Physics, Tongji University, Shanghai, China

EB-14. Oscillating Behavior of Inverse Faraday Effect in YFeO3. A.A. Voronov1,2, D. Ignatyeva1,2, A. Zvezdin2,4 and V.I. Belotelov1,2 1. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 2. Russian Quantum Center, Moscow, Russian Federation; 3. Physics and Technology Institute, V.I. Vernadsky Crimean Federal University, Simferopol, Russian Federation; 4. Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russian Federation
EC-01. Nonreciprocity and Unconventional Singularities in Cavity Magnonics, (Invited) Y. Wang1, Y. Yang1, J. Rao1, Y. Gui1 and C. Hu1 1. University of Manitoba, Winnipeg, MB, Canada; 2. Zhejiang University, Hangzhou, China

EC-02. Magnon Fluxonics, (Invited) O. Dobrovolskiy1 1. Universitat Wien, Wien, Austria


EC-04. Strain Mediated Tunable Spin-Wave Transport in Magnonic Crystal YIG/PZT and YIG/GaAs Structures. A.V. Sadovnikov1, E. Beginin1, A. Grachev1, A. Stognijj1, S.E. Sheshukova1 and S. Nikitov1 1. Magnonics, N. G. Cernyevskogo National Research University in Saratov, Saratov, Russian Federation

EC-05. Reconfigurable Spin-Wave Propagation in Magnetic Stripe Domains in Hybrid System. K. Szule1, S. Tacchi2, P. Gruszecki1, F. Valdes Bango1, C. Quiros3, A. Hierro Rodriguez1, J. Diaz3, J. Martin3, M. Velez3, G. Carlotti3, M. Krawczyk1 and L. Alvarez Prado1 1. Facultad de Fisica, Universidad de Oviedo, Oviedo, Spain; 2. Departamento de Fisica, Universidad de Oviedo, Oviedo, Spain; 3. Centro de Investigacion en Nanomateriales y Nanotecnologia (CINN), Consejo Superior de Investigaciones Cientificas, Oviedo, Spain; 4. Dipartimento di Fisica e Geologia, Università di Perugia, Perugia, Italy

EC-06. Velocity Modulation of Surface Acoustic Waves via Einstein-de Haas Effect. S. Tateno1, Y. Kurimune1, M. Matsuo2, K. Yamono1 and Y. Nozaki1, 1. Dept. of Physics, Keio University, Yokohama, Japan; 2. Kavli Institute for Theoretical Sciences, University of Chinese Academy of Sciences, Beijing, China; 3. Center for Spintronics Research Network, Keio University, Yokohama, Japan; 4. Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Japan
EC-07. Confined Magnetoelastic Waves in Thin Waveguides. F. Vanderveken\textsuperscript{1,2}, J. Mulkers\textsuperscript{1}, J. Lelieart\textsuperscript{1}, B. Van Waeyenberge\textsuperscript{1}, B. Sorel\textsuperscript{1,2}, O. Zografo\textsuperscript{1}, F. Ciubotaru\textsuperscript{1} and C. Adelmann\textsuperscript{1} 1. IMEC, Leuven, Belgium; 2. Katholieke Universiteit Leuven, Leuven, Belgium; 3. Universiteit Gent, Gent, Belgium

EC-08. The Interaction Between Surface Acoustic Waves and Spin Waves: the Role of Anisotropy and Spatial Profiles of the Modes. N.K. Babu\textsuperscript{1}, A. Trzaskowska\textsuperscript{1}, P. Graczyk\textsuperscript{2}, G. Centala\textsuperscript{1}, S. Mieszczak\textsuperscript{1}, H. Glowinski\textsuperscript{2}, M. Zdunek\textsuperscript{1}, S. Mielcarek\textsuperscript{1} and J.W. Klos\textsuperscript{1} 1. ISQI, Faculty of Physics, Adam Mickiewicz University in Poznan, Poznan, Poland; 2. Institute of Molecular Physics, Polish Academy of Sciences, Poznan, Poland

EC-09. Analytical Model for Unitary Magnon-Mediated Quantum Gates in Hybrid Magnon-Photon Systems. C. Trevillian\textsuperscript{1} and V. Tyberkevych\textsuperscript{1} 1. Physics, Oakland University, Rochester, MI, United States

EC-10. Topological Magnon-Polaron in a two-Dimensional Ferromagnet. G. Go\textsuperscript{1}, S. Kim\textsuperscript{2} and K. Lee\textsuperscript{3} 1. Korea University, Seongbuk-gu, The Republic of Korea; 2. Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea

EC-11. Focused SAWs Enhance Nonlinearity in ADFMR. D.A. Bas\textsuperscript{1}, P. Shah\textsuperscript{1} and M. Page\textsuperscript{1} 1. Air Force Research Laboratory, Wright-Patterson AFB, OH, United States

EC-12. Study of a new Type of Excitation in the Multiferroic Magnetoelectric Compound GdMn\textsubscript{2}O\textsubscript{5}, the Electromagnon. A. Vauvat\textsuperscript{1}, V. Balédent\textsuperscript{1}, P. Roy\textsuperscript{2}, S. Petit\textsuperscript{3}, M. Lepetit\textsuperscript{4} and P. Fourny\textsuperscript{1} 1. Laboratoire de Physique des Solides, Laboratoire de Physique des Solides, Orsay, Île-de-France, FR, academic/physics, Orsay, France; 2. Synchrotron SOLEIL, Gif-sur-Yvette, France; 3. Laboratoire Leon Brillouin, Gif-sur-Yvette, France; 4. Institut NEEL, Grenoble, France

EC-13. Magnetodynamic Properties of FeGaB/Al\textsubscript{2}O\textsubscript{3} Multilayer Thin Film Stack for Microwave Applications. Y. Karampuri\textsuperscript{1}, W. Yuxi\textsuperscript{1} and W. Tao\textsuperscript{1} 1. ShanghaiTech University, Shanghai, China

ON-DEMAND SESSIONS

Session ED
MAGNON SPINTRONICS
Satoshi Iihama, Co-Chair
Tohoku University, Sendai, Japan
Sergiu Ruta, Co-Chair
University of York, York, United Kingdom

ED-01. Reconfigurable Magnonics Using Self-Biased Reprogrammable Nanomagnetic Structures. (Invited) A. Haldar\textsuperscript{1} and A.O. Adeyeye\textsuperscript{2} 1. Physics, Indian Institute of Technology Hyderabad, Hyderabad, India; 2. Physics, Durham University, Durham, United Kingdom
ED-02. Voltage-Controlled Magnonic Crystal at the Sub-Micron Scale. H. Merbouche1, I. Boventer1, V. Haspot1, S. Fusil1, V. Garcia1, D. Gouèrè1, C. Carrétéro1, A. Vecchiola1, R. Lebrun1, P. Bortolotti1, L. Vila1, M. Bibles1, A. Barthélémé1 and A. Anane1. 1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. CEA, CNRS Grenoble INP, Spintec, Université Grenoble Alpes, Grenoble, France

ED-03. Micromagnetic Simulations of Spin Waves Propagation by SOT in a Bi-YIG Waveguide. A. El Kanj1, H. Merbouche1, D. Gouèrè1, I. Boventer1, R. Lebrun1, P. Bortolotti1, V. Cros1 and A. Anane1. 1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France

ED-04. Short-Range Thermal Magnon Diffusion in Magnetic Garnet. K. An1, R. Kohno1, N. Thiery1, D. Reitz5, L. Vila1, V.v. Naletov1,2, N. Beaulieu1, J. Ben Youssef1, G. de Loubens1, Y. Tserkovnyak5 and O. Klein1. 1. CEA, CNRS, Spintec, Université Grenoble Alpes, Grenoble, France; 2. Institute of Physics, Kazan Federal University, Kazan, Russian Federation; 3. LabSTICC, CNRS, Université de Bretagne Occidentale, Brest, France; 4. SPEC, CEA-Saclay, CNRS, Université Paris-Saclay, Gif-sur-Yvette, France; 5. Department of Physics and Astronomy, University of California Los Angeles, Los Angeles, CA, United States

ED-05. Spin-Wave Emission From Vortex Cores Under Static Magnetic Bias Fields. S. Mayr1,2, L. Flajšman3,4, S. Finizio1, A. Hrabec1,2, M. Weigand5, J. Förster6, H. Stoll6, L. Heyderman1,2, M. Urbánek3, S. Wintz1,6 and J. Raabe1. 1. Paul Scherrer Institut, Villigen, Switzerland; 2. Department of Materials, ETH Zurich, Zurich, Switzerland; 3. CEITEC BUT, Brno University of Technology, Brno, Czechia; 4. Department of Applied Physics, Aalto University, Aalto, Finland; 5. Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany; 6. Max-Planck-Institute Stuttgart, Stuttgart, Germany

ED-06. Parity-Controlled Spin-Wave Excitations in Synthetic Antiferromagnets. A. Sud1,2, Y. Koike3, S. Iihama3, C.W. Zollitsch2, S. Mizukami3 and H. Kurebayashi1,2. 1. Electronic and Electrical Engineering, University College London, London, United Kingdom; 2. London Centre for Nanotechnology, London, United Kingdom; 3. Tohoku National University, Sendai, Japan


ED-08. Antiferromagnetic Artificial Neural Networks With Symmetric Coupling. H. Bradley1, S. Louis1 and V. Tyberkevych1. 1. Physics, Oakland University, Rochester, MI, United States

ED-09. Amplifying Spin Waves Along Néel Domain Wall by Spin-Orbit Torque. Y. Zhou1. 1. School of Science and Engineering, The Chinese University of Hong Kong, Hong Kong
ED-10. Mutual Synchronization of an Array of Spin-Torque Oscillators With Perpendicular Polarizer. M. Castro1, D. Mancilla2, A. Litvinenko1, M. Ibarra Gomez1, B. Dieny1, S. Allende2, L.D. Buda-Prejbeanu1 and U. Ebels1. 1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, SPINTEC, 38000, Grenoble, France; 2. Universidad de Santiago de Chile, Cédena, Santiago, Chile

ED-11. The Interplay Between the Rapid Cooling-Induced BEC and SHE-STT-Driven Bullet Mode. M. Schneider1, D. Breitbach1, R. Serha1, Q. Wang2, A.A. Serga1, A.N. Slavin1, V. Tyberkevych1, B. Heinz1, B. Lägel1, C. Dubs2, T. Brächer1, S. Knauer2, O. Dobrovolskiy2, P. Pirro1, B. Hillebrands1 and A. Chumak2. 1. Fachbereich Physik, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Faculty of Physics, Universität Wien, Wien, Austria; 3. Department of Physics, Oakland University, Rochester, MI, United States; 4. Innvent eV Technologieentwicklung Jena, Jena, Germany

ED-12. Chiral Spin-Wave Velocities Induced by All-Garnet Interfacial Dyakoshinskii-Moriya Interaction in Ultrathin Yttrium Iron Garnet Films. H. Wang1, J. Chen1,3, T. Liu1, J. Zhang1, K. Baumgaertl1, C. Guo4, Y. Li1,6, C. Liu1,2, P. Che1, S. Tu1, S. Liu2, P. Gao1,6, X. Han4, D. Yu1, M. Wu1, D. Grundler3,4 and H. Yu1. 1. School of Integrated Circuit Science and Engineering, Beihang University, Beijing, China; 2. Department of Physics, Colorado State University, Fort Collins, CO, United States; 3. School of Engineering, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland; 4. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 5. Electron Microscopy Laboratory, School of Physics, Peking University, Beijing, China; 6. International Center for Quantum Materials, School of Physics, Peking University, Beijing, China; 7. Shenzhen Institute for Quantum Science and Engineering (SIQSE), and Department of Physics, Southern University of Science and Technology, Shenzhen, China; 8. Institute of Microengineering (IMT), School of Engineering, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland


ED-14. Direct Observation of Magnon Modes in Kagome Artificial Spin Ice With Topological Defects. V. Bhat1,2, S. Watanabe1, K. Baumgaertl1 and D. Grundler1,3. 1. Institute of Materials, Laboratory of Nanoscale Magnetic Materials and Magnonics, School of Engineering, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland; 2. International Research Centre MagTop, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 3. Institute of Microengineering, Laboratory of Nanoscale Magnetic Materials and Magnonics, School of Engineering, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland
ED-15. Dependence of Spin Wave Modes on the Geometry of Nanomagnets in Square Artificial Spin ice Vertices. N. Arora and P. Das. 1. Department of Physics, Indian Institute of Technology Delhi, New Delhi, India

ON-DEMAND SESSIONS

Session EE

NANOSCALE AND APPLIED MAGNONICS

Oleksandr Dobrovolskiy, Co-Chair
University of Vienna, Vienna, Austria
Qi Wang, Co-Chair
Universitat Wien, Vienna, Austria


EE-02. Spin-Wave Circulation in a Ferromagnetic Resonator With Two Adjacent Layers. K. Szulc, M. Krawczyk and P. Roberjot. 1. Universitet im Adama Mickiewicza w Poznaniu, Poznan, Poland

EE-03. Towards Wave-Based Logic Operation Using Multi-Directional sub-100 nm Magnons. S. Watanabe, V. Bhat, A. Mucchietto, S. Shan and D. Grundler. 1. IMX, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland; 2. Institute of Physics, Polska Akademia Nauk, Warszawa, Poland; 3. IMT, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland


Monday
EE-06. Spin Wave Based Spectrum Analysis Based on Non-Linear Excitation via FIB-Created Gratings in YIG. M. Kiechle1, A. Papp3, S. Mendisch1, V. Ahrens1, L. Sahin1, G. Csaba3, W. Porod2 and M. Becherer2 1. Electrical and Computer Engineering, Technische Universität München, München, Germany; 2. Electrical Engineering, University of Notre Dame, Notre Dame, IN, United States; 3. Pazmany Peter Catholic University Faculty of Information and Bionics, Budapest, Hungary

EE-07. Anomalous Refraction of Spin Waves as a Way to Guide Signals in Curved Magnonic Multimode Waveguides. S. Mieszczak2, O. Buse1, P. Gruszecki1, A. Kuchko2,3, J.W. Klos1 and M. Krawczyk1 1. Faculty of Physics, Universytet im Adama Mickiewicza w Poznaniu, Poznan, Poland; 2. National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Kyiv, Ukraine; 3. Institute of Magnetism of NAS of Ukraine, Kyiv, Ukraine

EE-08. Sub-Micrometer Near-Field Focusing of Spin Waves in Ultrathin YIG Films. B. Divinskiy1, N. Thiery2, L. Vila2, O. Klein2, N. Beaulieu3, J. Ben Youssef3, N. Beaulieu3, J. Ben Youssef3, S.O. Demokritov1 and V.E. Demidov1 1. Institute for Applied Physics, Westfälische Wilhelms-Universität Münster, Münster, Germany; 2. Univ. Grenoble Alpes, Grenoble, France; 3. Université de Bretagne Occidentale, Brest, France

EE-09. Low-Loss Magnonic Crystals Based on Nanometer-Thick YIG Films. H. Qin1, F. Hermann1 and S. van Dijken1 1. NanoSpin, Department of Applied Physics, Aalto-yliopisto, Aalto, Finland

EE-10. Brillouin Light Scattering Study of Spin Waves in CoP Exchange Spring Thin Films. A. Samanta1,2, G. Gubbiotti3 and S. Roy1,2 1. Micropower Systems and Nanomagnetics Group, Micro-Nano-Systems Center, Tyndall National Institute, Cork, Ireland; 2. Department of Physics, University College Cork, Cork, Ireland; 3. Istituto Officina dei Materiali del Consiglio Nazionale delle Ricerche (CNR-IOM), Sede di Perugia, c/o Dipartimento di Fisica e Geologia, Università degli Studi di Perugia, Perugia, Italy

EE-11. Design of a Coplanar-Waveguide-Based Microwave-to-Spin-Wave Transducer. H.O. Aquino1, G.H. Bernstein1 and W. Porod1 1. Electrical Engineering, University of Notre Dame, Notre Dame, IN, United States

EE-12. Microstructural Properties and Damping Behavior in Cerium Doped Yttrium Iron Garnet Thin Films Synthesized via Pulsed Laser Deposition Technique. F. Mohmed1,2, M. Ikram1 and Y. Lin2 1. Physics, National Institute of Technology Srinagar, Srinagar, India; 2. Tsinghua University School of Materials Science and Engineering, Beijing, China

EE-14. Subwavelength Resonant Control of the Spin-Wave Phase in Thin Ferromagnetic Films. K. Sobucki¹, W. Smigaj², J.N. Rychly³, M. Krawczyk⁴ and P. Gruszecki⁵
I. Nanomaterials, Uniwersytet im Adama Mickiewicza w Poznaniu, Poznan, Poland; 2. Met Office, Exeter, United Kingdom; 3. Polska Akademia Nauk Instytut Fizyki Molekularnej, Poznan, Poland

1. Electrical Engineering and Information System, The University of Tokyo, Bunkyo-ku, Japan

ON-DEMAND SESSIONS
Session EP
MAGNONICS I (Poster Session)
Alexandr Sadovnikov, Chair
Saratov State University, Saratov, Russian Federation

EP-01. Standing Spin Wave Resonance Properties of Multiple Spin Wave Modes on Co₂FeAl Magnetic Strip Under Zero Bias Field. X. Ya¹, K. Kurihara², K. Koki², H. Ogami², Y. Kurokawa², H. Yuasa², T. Tanaka² and K. Matsuyama²
1. IMI, Kyushu University, Fukuoka, Japan; 2. ISEE, Kyushu University, Fukuoka, Japan

1. N. G. Cernysevskogo National Research University in Saratov, Saratov, Russian Federation; 2. University of Exeter, Exeter, United Kingdom

EP-03. Unidirectional Spin-Wave Coupler Based on YIG Nonidentical Magnonic Crystals. V. Gubanov¹, S.E. Sheshukova¹, A.V. Sadovnikov¹ and S. Nikitov²
1. Nonlinear Processes, N. G. Cernysevskogo National Research University in Saratov, Saratov, Russian Federation; 2. V. A. Kotelnikova Institute for Radiotechnologu and Electronics, Russian Academy of Sciences, Moscow, Russian Federation

EP-04. Current-Induced Spin-Wave Doppler Shift and Attenuation in Compensated Ferrimagnets. D. Kim¹, S. Oh¹, D. Lee¹, S. Kim¹ and K. Lee¹
1. Korea University, Seongbuk-gu, The Republic of Korea; 2. Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea

EP-05. Magnon Blocking Effect in Antiferromagnet Spacered Magnon Junction. Z. Yan¹, C. Wan¹ and X. Han¹
1. Chinese Academy of Sciences, Institute of Physics, University of Chinese Academy of Sciences, Beijing, China

Monday 93
EP-06. A Nonlocal Spin Hall Magnetoresistance in a Pt Layer Deposited on a Magnon Junction. C. Guo1, C. Wan1 and X. Han1. Chinese Academy of Sciences Institute of Physics, Beijing, China

EP-07. Excitation of Short Wavelength Spin Waves in a Ferromagnetic Conduit With a Microwave Pumped Perpendicularly Magnetized Nanodot. M. Moulie1, M.K. Zelen1 and M. Krawczyk1. Institute of Physics, University of Warsaw, Warsaw, Poland

EP-08. Design of Broadband XOR Logic Gate Based on Edge-Mode Type Spin Wave. L. Zheng1, D. Zhang1, L. Jin1, T. Wen1, Y. Liao1, X. Tang1 and Z. Zhong1. University of Electronic Science and Technology of China State Key Laboratory of Electronic Thin Films and Integrated Devices, Chengdu, China

EP-09. Linear and Nonlinear Spin-Wave Propagation in Magnonic Waveguide With Linearly Varying Width. V. Gubanov1, E. Beginin1, A.V. Sadovnikov1 and S. Nikitov1. N. G. Cernyevskogo National Research University in Saratov, Saratov, Russian Federation; V. V. Kotelnikova Institute for Radiotechnology and Electronics, Russian Academy of Sciences, Moscow, Russian Federation

ON-DEMAND SESSIONS

Session EQ
MAGNONICS II
(Poster Session)
Jaroslaw Klos, Chair
Uniwersytet im Adama Mickiewicza w Poznaniu, Poznan, Poland

EQ-01. Magnetization Dynamics and Spin Wave Excitation in Strain-Mediated Multiferroic Heterostructures With the Interfacial Dzyaloshinskii-Moriya Interaction. D. Nian1, M. Zhu1, H. Yang1, Y. Qiu1, G. Yu1 and H. Zhou1. Key Laboratory of Electromagnetic Wave Information Technology and Metrology of Zhejiang Province, China Jiliang University, Hangzhou, China

EQ-02. A Novel Approach for Controlling Spin-Wave Dynamics in Magnonic Crystals Using Metal-Insulator Switching of Vanadium Dioxide. A.A. Nikitin1, A.A. Nikitin1, A.E. Komlev1 and A.B. Ustinov1. Physical Electronics and Technology, St. Petersburg Electrotechnical University, St. Petersburg, Russian Federation

EQ-03. Withdrawn

EQ-04. Voltage-Controlled Fano Resonances in Irregular Magnonic Structure. A. Grachev1, E. Beginin1, I. Fil’chenkov1 and A.V. Sadovnikov1. N. G. Cernyevskogo National Research University in Saratov, Saratov, Russian Federation


EQ-07. Brillouin Light Scattering Study of Spin-Wave Spectra in YIG/LiNbO3 Magnonic Crystals. A.V. Sadovnikov, A. Stognijj, A. Serokurova, E. Beginin, S.E. Sheshukova and A. Grachev. 1. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation; 2. Bashkir State University, Ufa, Russian Federation; 3. South Ural State University, Chelyabinsk, Russian Federation; 4. The Open University of Japan, Chiba, Japan


EQ-09. Cherenkov-Type Radiation of Spin Waves Induced by Interfacial Dzyaloshinskii-Moriya Interaction. H. Xia, H. Chen, C. Won, H.B. Zhao and Y. Wu. 1. Department of physics, Fudan University, Shanghai, China; 2. Department of physics, Kyung Hee University, Seoul, The Republic of Korea; 3. Department of Optical Science and Engineering, Fudan University, Shanghai, China

ON-DEMAND SESSIONS

Session ER
MICROWAVE AND MILLIMETER WAVE DEVICES
(Poster Session)
Nian Sun, Chair
Northeastern University, Boston, MA, United States

1. Electrical & Computer Engineering, University of Minnesota Twin Cities, Minneapolis, MN, United States; 2. Chemical Engineering and Material Science, University of Minnesota Twin Cities, Minneapolis, MN, United States

1. Graduate School of Engineering Science, Akita University, Akita, Japan

1. Institut d’Electronique et de Telecommunications de Rennes, Rennes, France; 2. Centro Federal de Educacao Tecnologica de Minas Gerais, Belo Horizonte, Brazil; 3. Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

1. Graduate Program in Electrical Engineering, Pontificia Universidade Catolica de Minas Gerais, Belo Horizonte, Brazil; 2. Electrical Engineering Department, Centro Federal de Educacao Tecnologica de Minas Gerais, Belo Horizonte, Brazil

1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, SPINTEC, Grenoble, France; 2. Oakland University, Rochester, MI, United States

ER-07. Two-Dimensional Airy Beam Generation and Manipulation Utilizing Metasurface. Z. Zhao, X. Ding, K. Zhang, J. Fu and Q. Wu
1. Harbin Institute of Technology, Harbin, China

ER-08. Thresholdless Broadband Spin-Torque Diode Rectification via Spatial Nonuniformity of the Magnetization Distribution. I. Kindiak, G. Kichin, P. Skirdkov, A. Jenkins, R. Ferreira and K. Zvezdin

ER-09. Magnetic and Microwave Properties of FeNi Thin Films of Different Thicknesses Deposited Onto Cyclo Olefin Copolymer Flexible Substrates. C. Madrid Aguilar, A. Svalov, A. Kharlamova, E. Shalygina, A. Larrañaga, I. Orue and G.V. Kurylandskaya
1. Electricidad y Electronica, Universidad del Pais Vasco Facultad de Ciencia y Tecnologia, Leioa, Spain; 2. Institute of Natural Sci. and Math., Ural Federal University, Ekaterinburg, Russian Federation; 3. Department of Magnetism, M.V. Lomonosov Moscow State University, Moscow, Russian Federation; 4. SGIKER, Universidad del Pais Vasco Facultad de Ciencia y Tecnologia, Leioa, Spain

96 Monday
ER-10. Metamaterial Based Broadband Absorber Design. C. De Moro do Carmo1, L. Ribeiro1, U.d. Resende2 and R.M. de Souza Batalha1. 1. Electrical Engineering, Pontificia Universidade Catolica de Minas Gerais, Belo Horizonte, Brazil; 2. Electrical Engineering, Centro Federal de Eduacao Tecnologica de Minas Gerais, Belo Horizonte, Brazil

ER-11. Magnetic Shielding of Pillar-Structured Spin-Torque Vortex Oscillators. G. Büttel1, M. Qaid2, T. Peters3, K. Rott3, I. Sivanesanrajah1, J. Demir1, J. Schmalhorst1, G. Reiss1, G. Schmidt2 and U. Hartmann1. 1. Institute of Experimental Physics, Universitat des Saarlandes, Saarbrucken, Germany; 2. Institute of Experimental Physics, Martin-Luther-Universitat Halle-Wittenberg, Halle, Germany; 3. Department of Physics, Universitat Bielefeld, Bielefeld, Germany

ER-12. Simultaneous Evaluation of Permeability and Permittivity Using a Flexible Microstrip Line-Type Probe up to 67 GHz. S. Yabukami1, K. Nozawa1, C. Iwasaki1, S. Takahashi1, K. Okita1, M. Sato1 and S. Sugimoto1. 1. Tohoku University, Sendai, Japan

ER-13. Experimental Study of Microwave Magnetic Properties of Composites Under Magnetic Bias. A. Shiryaev1, K. Rozanov1, A. Artemova1, S. Bobrovskii1, A. Naboko1, A. Osipov1, D. Petrov1 and P. Zezyulina1. 1. Institute for Theoretical and Applied Electromagnetics RAS, Moscow, Russian Federation

THURSDAY
8:00 AM EUROPE CEST

LIVE Q&A SESSIONS

Session FA

TERAHERTZ SPINTRONICS
Alina Deac, Co-Chair
Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany
Paul Nutter, Co-Chair
Manchester University, Manchester, United Kingdom

FA-01. Probing and Driving Ultrafast Spin Transport With Terahertz Electromagnetic Pulses. (Invited) T. Kampfrath1,2. 1. Department of Physics, Freie Universitat Berlin, Berlin, Germany; 2. Department of Physical Chemistry, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany

FA-02. Inertial Spin Dynamics in Ferromagnets. (Invited) S. Bonetti1,2. 1. Stockholms Universitet, Stockholm, Sweden; 2. Universita Ca’ Foscari, Venezia, Italy

FA-03. Terahertz Spin-Charge Conversion in Magnetic Single and Multiple Layers. (Invited) Y. Wu1, Q. Zhang1,2, Z. Chen2 and X. Zhang2. 1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore; 2. Department of Electrical & Electronic Engineering, Southern University of Science and Technology, Shenzhen, China

FA-04. Controlling Antiferromagnetic Resonances. (Invited) T. Moriyama1. 1. Institute for Chemical Research, Kyoto University, Uji, Japan
FA-05. Ferrimagnetic Thin Films Systems for Spintronic THz Emitters. (Invited) M. Fix², R. Schneider¹, J. Bensmann¹, S. Michaelis De Vasconcellos¹, R. Bratschitsch¹ and M. Albrecht² 1. Westfälische Wilhelms-Universität Münster, Münster, Germany; 2. Universität Augsburg, Augsburg, Germany

FA-06. THz Spintronics of Antiferromagnetic FeRh/Pt. (Invited) G. Li¹ and A. Kimel¹ 1. Radboud Universiteit, Nijmegen, Netherlands

ON-DEMAND SESSIONS

Session FB

SPIN PUMPING, RESONANCE AND THZ DYNAMICS

Kyusup Lee, Co-Chair
National University of Singapore, Singapore
Raghav Sharma, Co-Chair
National University of Singapore, Singapore

FB-01. Efficiency of THz Spintronic Emitters: From Spin-Hall Effect in 3d Metals to Surfaces States in Topological Insulators. (Invited) E. Rongione¹,², L. Baringthon¹,², J. Hawacker², P. Lefèvre³, N. Reyren¹, R. Lebrun¹, J. George¹, S. Dhillon² and A. Semisalova¹ 1. Unite Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Laboratoire de Physique de l’ENS, Paris, France; 3. Cassiopée beamline, Synchrotron SOLEIL, Saint-Aubin, France

FB-02. Spin Pumping in Embedded Lateral Nanostructures in Fe₈₀Al₂₀. T. Strusch¹, R. Meckenstock¹, R. Bali², J. Ehrler², K. Potzger², K. Lenz², J. Lindner², M. Farle¹ and A. Semisalova¹ 1. Faculty of Physics, Universität Duisburg-Essen, Duisburg, Germany; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany

FB-03. Spin Waves and Spin Pumping Driven by Cavity Confined Bulk Hypersonic Waves. N. Polzikova¹, S. Alekseev¹, S. Dizhur¹, V. Luzanov¹, A. Raevskiy³ and S. Nikitov¹,² 1. V. A. Kotelnikova Institute for Radiotechnology and Electronics, Russian Academy of Science, Moscow, Russian Federation; 2. Moscow Institute of Physics and Technology State University, Dolgoprudny, Russian Federation; 3. V. A. Kotelnikova Institute of Radiotechnology and Electronics, Russian Academy of Sciences, Fryazino, Russian Federation

FB-04. Effect of Ta Capping Layer on Damping Properties in Co₈₀Fe₂₀ Thin Films. B. Panigrahi¹,², S. K. Sahoo¹,², M. M. Raja², H. Basumatary² and A. Haldar¹ 1. Physics, Indian Institute of Technology Hyderabad, Hyderabad, India; 2. DRDO Defence Metallurgical Research Laboratory, Hyderabad, India

FB-05. Controlled Nonlinear Magnetic Damping in Spin-Hall Nano-Devices. B. Divinskiy¹, S. Urazhdin², S.O. Demokritov¹ and V.E. Demidov¹ 1. Institute for Applied Physics, Westfälische Wilhelms-Universität Münster, Münster, Germany; 2. Department of Physics, Emory University, Atlanta, GA, United States

FB-07. Phonon Pumping by Magnonic Spin Currents: Experiments and Theory. S.M. Rezende$^1$, J. Holanda$^2$, D. Maior$^1$, O. Santos$^1$ and A. Azevedo$^1$. Física, Universidade Federal de Pernambuco Centro de Ciências Exatas e da Natureza, Recife, Brazil; 2. Física, Universidade Federal do Espírito Santo, Vitoria, Brazil


FB-09. Evaluation of Interaction Between Local Magnetization Dynamics and Spin Waves Measured by ST-FMR. T. Koda$^1$, S. Muroga$^2$, S. Hashi$^3$ and Y. Endo$^4$$^5$. Electronic Mechanical Engineering, National Institute of Technology, Oshima College, Suo-Oshima, Japan; 2. Mathematical Science and Electrical- Electronic-Computer Engineering, Akita University, Akita, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 4. Electrical Engineering, Tohoku University, Sendai, Japan; 5. Center for Spintronics Research Network, Tohoku University, Sendai, Japan

FB-10. Nonsymmetric Spin Pumping in a Multiferroic Heterostructure Using Surface Acoustic Wave. P. Rovillain$^{1,2}$, R. Cardoso de Olivero$^3$, M. Marangolo$^{1,2}$ and J. Duquesne$^{4,5}$$. Institut des NanoSciences de Paris, Paris, France; 2. Sorbonne Université, Paris, France; 3. Universidade Federal do Parana, Curitiba, Brazil; 4. Centre National de la Recherche Scientifique, Paris, France

FB-11. Laser Pulse Induced Ultrafast Spin Current Through the Antiferromagnetic Insulator in Pu/Co/FeCoB. Y. Sasaki$^{1,2}$, G. Li$^3$, T. Moriyama$^4$, T. Oto$^5$, R.V. Mikhailovskiy$^6$, A. Kimel$^7$ and S. Mizukami$^2$. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Radboud University, Institute for Molecules and Materials, Nijmegen, Netherlands; 4. Institute for Chemical Research, Kyoto University, Uji, Japan; 5. Lancaster University Department of Physics, Lancaster, United Kingdom

Monday 99
FB-12. Tunable Terahertz Wave via Synthesis of Spin and Charge Induced Radiations in Topological Insulator. H. Wang1,3, X. Chen2, H. Zhao1, C. Fang1,3, T. Nie1,3, X. Wu2 and W. Zhao1,3
1. School of Integrated Circuit Science and Engineering and Advanced Innovation Center for Big Data and Brain Computing, Beihang University, Beijing, China; 2. School of Electronic and Information Engineering, Beihang University, Beijing, China; 3. Beihang-Goertek Joint Microelectronics Institute, Beihang University, Qingdao, China

FB-13. Emission of THz Radiation From Co20Fe60B20/Pt Spintronic Thin Films With Varying Microstructural Properties. C. Bull1,2, R. Ji1, C. Lin1, S. Hewett1, T. Thomson2, D. Graham1,3 and P. Nutter2 1. Photon Science Institute, Dept. of Physics & Astronomy, The University of Manchester, Manchester, United Kingdom; 2. Nano Engineering and Spintronic Technologies Group, Dept. of Computer Science, The University of Manchester, Manchester, United Kingdom; 3. The Cockroft Institute, Sci-Tech Daresbury, Daresbury, United Kingdom


ON-DEMAND SESSIONS

Session FC

GHZ TO THZ PRECESSIONAL MAGNETIZATION DYNAMICS

Matthieu Bailleul, Chair
Universite de Strasbourg, Strasbourg, France

FC-01. High-Frequency Magnetoacoustic Resonance Through Strain-Spin Coupling in Perpendicular Magnetic Multilayers. (Invited) T. Qu1, D. Lattery2, J. Zhu1, D. Zhang1, J. Wang1, X. Wang1 and R. Victora1 1. University of Minnesota Twin Cities, Minneapolis, MN, United States; 2. Seagate Recording Head Operations, Bloomington, MN, United States; 3. Dalian University of Technology, Dalian, China

FC-02. Strong Coupling of Antiferromagnetic Resonance With sub-THz Cavity Fields. M. Bialek1,2, J. Zhang2, H. Yu2 and J. Ansermet1 1. Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland; 2. Beihang University, Beijing, China
FC-03. Characterizing Interlayer Coupling in Synthetic Ferromagnetic Thin Films. H.J. Waring, Y. Li, C. Moutafis, I. Vera-Marin and T. Thomson. 1. Computer Science, The University of Manchester, Manchester, United Kingdom; 2. Physics and Astronomy, The University of Manchester, Manchester, United Kingdom

FC-04. FMR and Thermal Spin Pumping in Garnets/Pt Bilayers. L.M. Solis, S. Carreira, M. Aguirre, L. Steren, A. Butera, J. Gómez, J. Briático and C. García. 1. Centro Atomico Constituyentes, San Martin, Argentina; 2. Universidad de Zaragoza Instituto de Nanociencia de Aragon, Zaragoza, Spain; 3. Universidad de Zaragoza Departamento de Física de la Materia Condensada, Zaragoza, Spain; 4. Unite Mixte de Physique CNRS/Thales, Palaiseau, France; 5. Centro Atomico Bariloche, Bariloche, Argentina; 6. Universidad Tecnica Federico Santa Maria Departamento de Física, Valparaíso, Chile

FC-05. Time Resolved MOKE Study of the Ta/CoFeB/MgO Films. Y. Gong, X. Lu, J. Su, Z. Chen, L. Yang, Y. Yan, X. Ruani, J. Du, J. Cai, J. Wu, L. He, R. Zhang and Y. Xu. 1. School of Electronic Science and Engineering, Nanjing University, Nanjing, China; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 3. Department of Physics, Nanjing University, Nanjing, China; 4. Department of Electronics and Physics, University of York, York, United Kingdom

FC-06. Electric-Field Modulation of Perpendicular Magnetic Anisotropy and Damping Constant in MgO/Co/Pt Trilayers. A. Sakoguchi, T. Kato, D. Oshima and S. Iwata. 1. Department of Electronics, Nagoya University, Nagoya, Japan; 2. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 3. Koeki Zaidan Hojin Nagoya Sangyo Kagaku Kenkyujo, Nagoya, Japan

FC-07. Magnetization Dynamics of Ultrathin [CoFeB (tCoFeB) / Pd]x Films With Perpendicular Magnetic Anisotropy. A.S. Silva, S. Sá, S.A. Bunyaev, C. García, I.J. Sola, G.N. Kakazei, H. Crespo and D. Navas. 1. Institute of Physics for Advanced Materials, Nanotechnology and Photonics (IFIMUP)/Departamento de Física e Astronomia, Universidade do Porto Faculdade de Ciencias, Porto, Portugal; 2. Departamento de Física y Centro Científico Tecnológico de Valparaíso-CCTVal, Universidad Tecnica Federico Santa Maria, Valparaíso, Chile; 3. Laser Applications and Photonics group, Applied Physics Department, Universidad de Salamanca, Salamanca, Spain; 4. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain

FC-08. Control of Static and Dynamic Magnetic Properties of NiFe30-x Alloy Thin Films. M.R. McMaster, W. Hendren, J. Scott and R. Bowman. 1. Mathematics and Physics, Queen’s University Belfast, Belfast, United Kingdom

Monday 101
Physical Mechanism Governing Sigmoid Curves of Stochastic Magnetic Tunnel Junctions. K. Kobayashi¹, W.A. Borders¹, S. Kanai¹,², K. Hayakawa¹, S. Fukami¹,³ and H. Ohno¹,⁴ ¹. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Division for the Establishment of Frontier Sciences, Organization for Advanced Studies, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 4. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan

ON-DEMAND SESSIONS

Session FD
ULTRAFAST MAGNETIZATION DYNAMICS, DAMPING AND NUTATION
Justin Shaw, Chair
National Institute of Standards and Technology, Gaithersburg, MD, United States

FD-01. Engineering Spintronic Devices to Observe Ferromagnetic Layer Switching Induced by a Single- Femto-Second Current Pulse. (Invited) S. Iihama¹,², Q. Remy³, J. Igarashi³, G. Malinowski³, M. Hehn³, J. Gorchon³, J. Hohlfeld², S. Fukami³, H. Ohno³ and S. Mangin² ¹. Center for Spintronics Research Network, Tohoku National University, Sendai, Japan; 2. Institut Jean Lamour, Universite de Lorraine, Nancy, France; 3. Research Institute of Electrical Communication, Tohoku National University, Sendai, Japan; 4. Research Institute of Electrical Communication, Tohoku National University, Sendai, Japan; 5. Frontier Research Institute for Interdisciplinary Science, Tohoku National University, Sendai, Japan

FD-02. Micromagnetic Understanding of Switching and Self-Oscillations in Ferrimagnetic Materials. F. Cutugno¹, L. Sánchez-Tejerina²,³, R. Tomasello¹, M. Carpentieri¹ and G. Finocchio² ¹. Politecnico di Bari Dipartimento di Ingegneria Elettrica e dell’Informazione, Bari, Italy; 2. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, Universita degli Studi di Messina, Messina, Italy; 3. Department of Biomedical, Dental, Morphological and Functional Imaging Sciences, Universita degli Studi di Messina, Messina, Italy; 4. Institute of Applied and Computational Mathematics, Foundation for Research and Technology, Heraklion, Greece
FD-03. Faster Chiral Versus Collinear Magnetic Order Recovery After Optical Excitation Revealed by Femtosecond XUV Scattering. (Invited) N. Kerber1,2, D. Ksenzov3, F. Freimuth3, F. Capotondi3, E. Pedersoli3, I. Lopez-Quintas3, B. Seng1,6, J. Cramer1,2, K. Litzius1,2, D. Lacour4, H. Zabel1, Y. Mokrousov1,4, M. Kläui1,2 and C. Gutt1 1. Institut für Physik, Johannes Gutenberg Universität Mainz, Mainz, Germany; 2. Johannes Gutenberg University Mainz Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Department Physik, Universität Siegen, Siegen, Germany; 4. Forschungszentrum Julich Peter Grunberg Institut, Julich, Germany; 5. Elettra Sincrotrone Trieste SCpA, Trieste, Italy; 6. Institut Jean Lamour, Nancy, France; 7. Ruhr-Universität Bochum Fakultät für Physik und Astronomie, Bochum, Germany

FD-04. Ultrafast Electronic Manipulation of Antiferromagnetic Spin Spiral States. S. Ghosh1, F. Freimuth1,2, O. Gomonay2, S. Blügel1 and Y. Mokrousov1,2 1. Forschungszentrum Julich GmbH, Julich, Germany; 2. Johannes Gutenberg Universität Mainz, Mainz, Germany


FD-06. Magnon-Phonon Damping Calculations in the Spin-Lattice Dynamics Model. M.S. Strungaru1, M.O. Ellis2, S. Ruta1, O. Chubykalo-Fesenko1, R.F. Evans1 and R.W. Chantrell1 1. Physics, University of York, York, United Kingdom; 2. Computer Science, The University of Sheffield, Sheffield, United Kingdom; 3. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain


ON-DEMAND SESSIONS

Session FE

ELECTRIC FIELD EFFECTS AND MAGNETIZATION SWITCHING

Dennis Meier, Chair
Norges teknisk-naturvitenskapelige universitet, Gjøvik, Norway

FE-01. Spin Current-Driven Control and Detection of Magnetization in Ferrimagnetic Insulators. (Invited) C. Avci
1. Department of Materials, ETH Zurich, Zurich, Switzerland

FE-02. Non-Volatile Electric-Field Control of Spin-Orbit Torques in Perpendicular Ferromagnet - SrTiO3 System. C. Grezes1, M. Cosset-Cheneau1, P. Noël1-2, L.M. Vicente Arche3, F. Trier2, S. Auffret1, K. Garello1, M. Bibes3, L. Vila1 and J. Attane1
1. CEA Grenoble, SPI/Intronique et Technologie des Composants, Grenoble, France; 2. ETH Zurich, Zurich, Switzerland; 3. Unite Mixte de Physique CNRS/Thales, Palaiseau, France

FE-03. Control of Magnetic Domain Wall Type Using Anisotropy Modulations. K.J. Franke1, A.K. Schmidt2 and C. Marrows1
1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. National Center for Electron Microscopy, Molecular Foundry, E. O. Lawrence Berkeley National Laboratory, Berkeley, CA, United States

FE-04. Voltage Control of Néel Domain Wall Interactions and Pinning Sites. J. Zehner1,2,*, I. Soldatov1, K. Nielsch1-2, R. Schäfer1 and K. Leistner1
1. Institute for Metallic Materials, Leibniz-Institut fur Festkorper- und Werkstoffforschung Dresden eV, Dresden, Germany; 2. Institute of Materials Science, Technische Universität Dresden, Dresden, Germany

FE-05. Voltage Control of Ferrimagnetic Order and Voltage-Assisted Spin Texture Writing by Solid-State Hydrogen Gating. M. Huang1, K. Klyukin1, L.M. Caretta1, K. Lee2, J. Chang2, B. Yildiz1,2 and G. Beach1
1. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 2. Korea Institute of Science and Technology, Seongbuk-gu, The Republic of Korea; 3. Department of Nuclear Science & Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States

FE-06. Exchange Bias Toggling in GdCo/NiO Thin Film System by Solid-State Hydrogen Gating. M. Hasan1, J. Zehner2, M. Huang1, K. Leistner2 and G. Beach1
1. Massachusetts Institute of Technology, Cambridge, MA, United States; 2. Leibniz-Institut für Festkorper- und Werkstoffforschung Dresden eV, Dresden, Germany
FE-07. Experimental Demonstration of Voltage-Gated Spin-Orbit Torque Switching in Antiferromagnet/Ferromagnet Structure. W. Li1,4, S. Peng1,4, J. Lu1,4, H. Wu1, X. Li1, D. Xiong1, Y. Zhang3, Y. Zhang3, K. Wang3 and W. Zhao1,4
1. School of Integrated Circuit Science and Engineering, Beihang University, Beijing, China; 2. School of Electronic and Information Engineering, Beihang University, Beijing, China; 3. Department of Electronic Engineering, University of California Los Angeles, Los Angeles, CA, United States; 4. Hefei Innovation Research Institute, Beihang University, Hefei, China

FE-08. Large Reversible Voltage Manipulation of Interface Magnetic Anisotropy in Pt/Co/Oxide Multilayers. A. Fassatoui1, J.A. Peña Garcia1, A. Bernard-Mantel2, L. Ranno1, H. Béa3, J. Vogel1 and S. Pizzini1
1. UGA-CNRS, Institut NEEL, Grenoble, France; 2. INSA Toulouse, Toulouse, France; 3. UGA-CNRS-CEA, SPIntronique et Technologie des Composants, Grenoble, France


ON-DEMAND SESSIONS

Session FG
ANTIFERROMAGNETIC SPINTRONICS I
Samik DuttaGupta, Chair
Tohoku University, Sendai, Japan

FG-01. Interpretation of the Anomalous Hall Effect as an Effective Topological Hall Effect in Noncollinear Kagome Magnets. O. Busch1, B. Göbel1 and I. Mertig1
1. Institute for Physics, Martin-Luther-Universitat Halle-Wittenberg, Halle, Germany

1. Department of Physics, University of York, York, United Kingdom; 2. Donostia International Physics Center, San Sebastian, Spain; 3. Polymers and Advanced Materials Department: Physics, Chemistry, and Technology, University of the Basque country, San Sebastian, Spain; 4. Dahlem Center for Complex Quantum Systems and Fachbereich Physik, Freie Universitat Berlin, Berlin, Germany; 5. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 6. Hitachi Cambridge Laboratory, Cambridge, United Kingdom
FG-03. Effects of Spin-Orbit Torque on the Ferromagnetic and Exchange Spin-Wave Modes in Ferrimagnetic Co-Gd Alloy. B. Divinskiy, G. Chen, S. Urazhdin, S.O. Demokritov and V.E. Demidov. 1. Institute for Applied Physics, Westfalische Wilhelms-Universitat Munster, Munster, Germany; 2. Department of Physics, Emory University, Atlanta, GA, United States

FG-04. Quantifying Spin Torques in CoO(001)/Pt Bilayers by Comparing Field- and Current-Induced Switching. L. Baldrati, C. Schmitt, O. Gomonay, R. Lebrun, R. Ramos, E. Saitoh, J. Sinova and M. Kläui. 1. Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 2. Unite Mixte de Physique CNRS/Thales, Palaiseau, France; 3. WPI-Advanced Institute for Materials Research, Tokyo University, Tokyo, Japan; 4. Tokyo University, Tokyo, Japan

FG-05. Dynamics of Synthetic Antiferromagnetic Skyrmion From Current-Induced Deterministic Motion to Thermally-Activated Diffusive Motion. T. Dohi, S. DuttGupta, F. Kammerbauer, J. Rothörl, P. Virnau, M. Kläui, M. Klaui, H. Ohno, J. RIEC, Tohoku University, Sendai, Japan; 2. Institute of Physics, Johannes Gutenberg Universität Mainz, Mainz, Germany; 3. CSIS, Tohoku University, Sendai, Japan; 4. Johannes Gutenberg Universität Mainz Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 5. Institut Jean Lamour, UMR CNRS 7198, Universite de Lorraine, Nancy, France


FG-08. Spontaneous Hall Effect in the Mn₅Si₃ Antiferromagnet, due to Antiferromagnetic Zeeman Spin-Splitting. B. Lopes Seeger¹, R. Reichlova², R. Gonzalez-Hernandez³, J. Kounta⁴, R. Schlitz⁵, D. Kriegner⁶, P. Ritzinger⁷, M. Lammel⁸, M. Leiviska¹, V. Petricke⁹, P. Doležal¹⁰, E. Schmoranzarová¹, A. Badura¹, A. Tomas², V. Baltz¹, L. Michez², J. Sinova³, S.T. Goennenwein¹⁰, T. Jungwirth¹¹, and L. Smejkal¹²

FG-09. Switching Experiment of Antiferromagnetic CoO in Different Temperatures. M. Grzybowski¹, C.F. Schippers¹, K. Rubi¹, U. Zeitler¹, M. Ba⁴, B. Koopmans¹ and H. Swagten¹
¹. Applied Physics Department, Eindhoven University of Technology, Eindhoven, Netherlands; 2. High Field Magnet Laboratory, Radboud Universiteit, Nijmegen, Netherlands

FG-10. Observation of Antiferromagnetic Magnon Pseudospin Dynamics and the Magnon Hanle Effect. T. Wimmer¹, A. Kamra¹, J. Gückelhorn¹, M. Opel¹, S. Geprägs¹, R. Gross¹, H. Huebl¹, and M. Althammer¹
¹. Magnetism and Spintronics, Walther-Meissner-Institute for Cryogenic Research, Garching, Germany; 2. Physik Department, Technische Universität München, München, Germany; 3. Department of Physics, Norwegian Technical and Natural Sciences University, Trondheim, Norway

FG-11. Antiferromagnetic Textures in Presence of Inhomogeneous Strain Field. O. Gomonay¹
¹. Johannes Gutenberg Universität Mainz, Mainz, Germany

FG-12. Ultrafast Spin Current Generated From an Antiferromagnet. (Invited) D. Wu¹
¹. Nanjing University, Nanjing, China

FG-13. Anomalous Nernst Effect in Compensated Ferrimagnetic Mn₅Ru₃Ga. Y. Lau¹, J. Wang¹, K. Kubota¹ and K. Takanashi¹
¹. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan

FG-14. Electrical Readout of the Antiferromagnetic State of IrMn Through Anomalous Hall Effect. M. Asa¹, C. Rinaldi¹, R. Pazzocco¹, L. Nessi¹ and M. Cantoni¹
¹. Physics, Politecnico di Milano, Milano, Italy; 2. IFN, Consiglio Nazionale delle Ricerche, Roma, Italy
ON-DEMAND SESSIONS

ANTIFERROMAGNETIC SPINTRONICS II
Vito Puliafito, Chair
Università degli Studi di Messina, Messina, Italy

FH-01. New Aspects of Magnetoelastic Responses in Chiral Antiferromagnets. (Invited) H. Chen1,2 1. Department of Physics, Colorado State University, Fort Collins, CO, United States; 2. School of Advanced Materials Discovery, Colorado State University, Fort Collins, CO, United States

FH-02. Penetration Depth of Cooper Pairs in the IrMn Antiferromagnet. R. Lopes Seeger1, F. Forestier1, O. Gladii1, M. Leiviska1, M. Rubio-Roy1, A. Buzdin3,4, M. Houzet5 and V. Baltz1 1. SPINtronique et Technologie des Composants, Grenoble, France; 2. Grenoble INP, CIME Nanotech, Grenoble, France; 3. Univ. Bordeaux, CNRS, LOMA, Talence, France; 4. Dept. Mat. Sci. & Met, Univ. Cambridge, Cambridge, United Kingdom; 5. Univ. Grenoble Alpes, CNRS, CEA, PHELIQS, Grenoble, France

FH-03. The Effect of RKKY Exchange Coupling Through Heavy Metal Interlayers on Future Skyrmionic Devices. P. Mirzadeh Vaghehfi1, A. Mandru1, O. Yildirim1, T. Dutta1 and H.J. Hug1,2 1. Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; 2. Universität Basel Departement Physik, Basel, Switzerland

FH-04. Mechanism of Current-Induced Magnetotransport in Epitaxial Antiferromagnetic α-Fe2O3. A. Churikova1, D. Bono1, A. Wittmann1, L. Scipioni2, A. Shepard3, T. Newhouse-Illige2, J.A. Greer2, N.O. Birge3 and G. Beach1 1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 2. PVD Products, Inc, Wilmington, MA, United States; 3. Department of Physics and Astronomy, Michigan State University, East Lansing, MI, United States

FH-05. Observation of the Magnetic Cluster Octupole Domain Evolution in Antiferromagnet Mn3Ge. M. Wü1,2, H. Isshiki2, T. Chen2, T. Higo3, S. Nakatsuji3,2 and Y. Otani1,2 1. Center for Emergent Matter Science, Rikagaku Kenkyujo, Wako, Japan; 2. The University of Tokyo Bussei Kenkyujo, Kashiwa, Japan; 3. Department of Physics, The University of Tokyo, Bunkyo-ku, Japan
FH-06. Direct Observation of Spin-Orbit Torques, Dzyaloshinskii-Moriya Interaction and Chiral Spin Textures in Single Layer Ferrimagnets. S. Krishnia1,3, E. Haltz1,4, L. Berges1, L. Aballe2, M. Foerster2, L. Bocher1, R. Weil1, A. Thiaville1, J. Sampaio1 and A. Mougin1
1. Université Paris-Saclay, CNRS, Laboratoire de Physique des Solides, Orsay, France; 2. Alba Synchrotron Light Facility, CELLS, Barcelona, Spain; 3. Unité Mixte de Physique, CNRS, Thales, Université Paris-Saclay, Palaiseau, France; 4. University of Leeds School of Physics and Astronomy, Leeds, United Kingdom

FH-07. Roles of Destressing, Pinning, and Weak Ferromagnetism for Magnetic Reversal in \(\alpha\)-Fe2O3. A. Wittmann1, A. Churikova1, L. Scipioni2, A. Shepard2, T. Newhouse-Illige2, J.A. Greer2, N.O. Birge3 and G. Beach1
1. Massachusetts Institute of Technology, Cambridge, MA, United States; 2. PVD Products, Wilmington, MA, United States; 3. Michigan State University, East Lansing, MI, United States

FH-08. Symmetry of Transversal Conductivity Signal in Antiferromagnetic MnSi. A. Badura1, H. Reichlova2,7, R. Schlitz2, D. Kriegner2,7, R. Lopes Seeger1, J. Kounta4, L. Michez4, E. Schmoranzerová1, V. Baltz2, S.T. Goennenwein1,3 and L. Smejkal6,7
1. Department of Chemical Physics and Optics, Univerzita Karlova Matematicko-fyzikalni fakulta, Praha, Czechia; 2. Institute for Solid State and Materials Physics, Technische Universität Dresden, Dresden, Germany; 3. SPINtronique et Technologie des Composants, Grenoble, France; 4. Centre Interdisciplinaire de Nanoscience de Marseille, Marseille, France; 5. Fachbereich Physik, Universität Konstanz, Konstanz, Germany; 6. Institut für Physik, Johannes Gutenberg Universität Mainz, Mainz, Germany; 7. Physics, Czech Academy of Science, Praha, Czechia

FH-09. Reversible Interlayer Exchange Coupling Regulation Induced by Phase Change of Atomically Thin VO2. X. Fan1, G. Wei1, X. Lin1 and W. Zhao1
1. Beihang University, Beijing, China

FH-10. The Chiral Hall Effect in Canted Ferromagnets and Antiferromagnets. J. Kipp1,2, K. Samanta1, F. Lux1,2, M. Merte1,2, D. Go1,3, J. Hanke1, M. Redies1,2, F. Freimuth1, S. Blügel1, M. Lezai1 and Y. Mokrousov1,3
1. PGI-1/IAS-1, Forschungszentrum Julich GmbH, Julich, Germany; 2. Physics, Rheinisch-Westfälische Technische Hochschule Aachen, Aachen, Germany; 3. Physics, Johannes Gutenberg Universität Mainz, Mainz, Germany

FH-11. Imprinting the Domain Structure of a Metallic Antiferromagnet on Thin Ferromagnetic Layers. S. Bommanaboyena1, D. Schoenke1, R. Reeve1, M. Klau1 and M. Jourdan1
1. Physics, Johannes Gutenberg Universität Mainz, Mainz, Germany
FH-12. Cavity Magnon Polaritons and Inverse Spin Hall Effect in Easy-Axis Antiferromagnets. I. Boventer1, H.T. Simensen4, A. Anane1, M. Kläui2,3, A. Brataas4 and R. Lebrun1. 1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Johannes Gutenberg Universitat Mainz, Mainz, Germany; 3. Johannes Gutenberg University Mainz Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 4. Center for Quantum Spintronics, Department of Physics, Norwegian Technical and Natural Sciences University, Trondheim, Norway


ON-DEMAND SESSIONS

Session FP
MAGNETIZATION DYNAMICS, DAMPING AND ULTRAFAST SWITCHING
(Poster Session)
Vijaysankar Kalappattil, Chair
Colorado State University, Fort Collins, CO, United States

FP-01. Independent Relationship Between Ultrafast Demagnetization and Anisotropic Gilbert Damping in Single Crystal Co50Fe50 Films. H. Xia1, Y. Wu1 and H.B. Zhao2. 1. Department of physics, Fudan University, Shanghai, China; 2. Department of Optical Science and Engineering, Fudan University, Shanghai, China

FP-02. Magnetic Nanowires as a Source of Irradiation of THz Frequency. D. Doludenko1, D. Zagorsky1, S. Chigarev2 and E. Vilkov2. 1. Institute for Crystallography and Photonics, Russian Academy of Science, Moscow, Russian Federation; 2. Kotelnikov Institute of Radioengineering and Electronics of Russian Academy of Sciences, Moscow, Russian Federation
FP-03. Spin-Torque Oscillation Modes of a Composite Synthetic Antiferromagnetic Free Layer in Dual Magnetic Tunnel Junctions. X. Chao1, Y. Zhang2 and J. Wang1 1. University of Minnesota, Minneapolis, MN, United States

FP-04. Chirped Photonic Crystals With GdFeCo for Layer-Selective Magnetization Control. O. Borovkova1, D. Ignatyeva1,2, A. Kalish1,2 and V.I. Belotelov1,2 1. M. V. Lomonosov Physics Faculty, Moscow State University, Moscow, Russian Federation; 2. Russian Quantum Center, Moscow, Russian Federation

FP-05. Magnetization-Orientation Dependent Terahertz Emission From the Fe/Pt (110) Single-Crystal Film. C. Liu1, W. Lu2, Z. Wei3, H. Xia1,4, H.B. Zhao4, Y. Wu1, Z. Yuan2 and J. Qi3 1. Department of Physics, Fudan University, Shanghai, China; 2. The Center for Advanced Quantum Studies and Department of Physics, Beijing Normal University, Beijing, China; 3. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 4. Shanghai Ultra-precision Optical Manufacturing Engineering Research Center, and Key Laboratory of Micro and Nano Photonic Structures (Ministry of Education), Department of Optical Science and Engineering, Fudan University, Shanghai, China

FP-06. Cavity-FMR Studies of LPE Epitaxial YIG Films. H. Hurdequint1, G. de Loubens1, J. Ben Youssef2, N. Beaulieu2 and N. Vukadinovic1,3 1. SPEC,CEA-Saclay, Université Paris-Saclay, Gif-sur-Yvette 91191, France; 2. LabSTICC, CNRS, Université de Bretagne Occidentale, 29238 Brest, France; 3. Dassault Aviation, 92552 Saint-Cloud, France

FP-07. Optically Induced Spin Wave Excitation in one-Dimensional Iron-Garnet Nanostripes. D. Krichevsky1,4, D. Ignatyeva1,4, D. Karki5, P. Zimnyakova3, M. Levy5 and V.I. Belotelov2,3 1. Moscow Institute for Physics and Technology State University, Dolgoprudny, Russian Federation; 2. Russian Quantum Center, Moscow, Russian Federation; 3. Moscow State University M. V. Lomonosova Physics Faculty, Moscow, Russian Federation; 4. V. I. Vernadskogo Crimean State University, Simferopol’, Ukraine; 5. Michigan Technological University, Houghton, MI, United States

FP-08. Measurement of Dynamic Properties in Ta/NiFe Microstrip Using Frequency Sweep Technique. D. Tiwari1,2 1. SPINtronique et Technologie des Composants, Grenoble, France; 2. Indian Institute of Technology Delhi, New Delhi, India

FP-09. Ferromagnetic Resonance Linewidth Broadening Induced by a Tunable Inhomogeneity Effect. Y. Xing1, Z. Yan2, J. Wei1, C. Wan1, G. Yu1 and X. Han1 1. Chinese Academy of Sciences Institute of Physics, Beijing, China

FP-10. Tunable Microwave Properties of Zigzag Nanowires. K. Begari1 and A. Haldar1 1. Physics Department, Indian Institute of Technology Hyderabad, Hyderabad, India
FP-11. Study on Comparison Between in-Plane and out-of-Plane Dynamic Magnetic Properties for Fe-M Binary Alloy Thin Films. Y. Endo1, T. Nguyen2 and T. Miyazaki3 1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 3. Technical Division, School of Engineering, Tohoku University, Sendai, Japan


FP-13. Spin Transfer Torque Oscillation in Orthogonal Magnetization Disks. L. Chuhan1, H. Naoki1, H. Shu1, Y. Kurokawa1 and H. Yuasa1 1. Kyushu University, Fukuoka, Japan

FP-14. Sensitivity Optimization of Spin-Torque Diode With Perpendicular Anisotropy Through Free Layer Thickness Tuning. A. Buzdakov1,2, P. Skirdkov1,3 and K. Zvezdin1,3 1. New Spintronic Technologies, Russian Quantum Center, Moscow, Russian Federation; 2. Moscow Institute of Physics and Technology, Engineering Center, Dolgoprudny, Russian Federation; 3. A. M. Prohorova Institute of General Physics, RAN, Moscow, Russian Federation

THURSDAY LIVE Q&A SESSIONS
3:00 PM EUROPE CEST

Session GA

SPINTRONICS FOR PROBABILISTIC COMPUTING
Olga Kazakova, Chair
National Physical Laboratory, Teddington, United Kingdom

GA-01. Tuneable Stochastic Domain-Wall Trajectories in a Magnetic Galton Board. (Invited) D. Sanz Hernandez1, M. Massouras2, N. Reyren1, N. Rougemaille1, V. Schánilec3,4, K. Bouzehouane1, M. Hene2, B. Canals3, D. Querlioz2, J. Grollier1, F. Montaigne2 and D. Lacour2 1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Institut Jean Lamour, Nancy, France; 3. Institut NEEL, Grenoble, France; 4. Stredoevropsky technologicky institut, Brno, Czechia; 5. Centre de Nanosciences et de Nanotechnologies, Orsay, France


ON-DEMAND SESSIONS

Session GB
NEUROMORPHIC COMPUTING
Alice Mizrahi, Co-Chair
Unite Mixte de Physique CNRS/Thales, Palaiseau, France
Dedalo Sanz Hernandez, Co-Chair
Unite Mixte de Physique CNRS/Thales, Palaiseau, France

GB-01. Ferrimagnetic Co-Gd-Bilayer-Based Fast and Energy-Efficient Synaptic Devices for Neuromorphic Computing. U. Sahu1, N. Sisodia2, J. Sharda1, P.K. Muduli2 and D. Bhowmik1. 1. Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India; 2. Physics, Indian Institute of Technology Delhi, New Delhi, India

GB-02. Domain Wall-Magnetic Tunnel Junction Spin Orbit Torque Devices for in-Memory Computing. T. Leonard1, M. Alamdar1, C. Cui1, B.P. Rimal1, L. Xue2, O.G. Akinola1, T.P. Xiao1, J.S. Friedman4, C.H. Bennett3, M.J. Marinella2 and J.C. Incorvia1. 1. The University of Texas at Austin, Austin, TX, United States; 2. Applied Materials Inc, Santa Clara, CA, United States; 3. Sandia National Laboratories, Albuquerque, NM, United States; 4. The University of Texas at Dallas, Richardson, TX, United States

GB-03. Imaging the Emergent Behaviour in Nanoring Assemblies for Reservoir Computing Applications. G. Venkat1, R. Dawidek1, T. Hayward1, A. Mullen1, S. Kyle1, P. Fry2, F. Maccherozzi3, S. Dhesi1, L. Aballe4, M. Foerster4, J. Pratt4 and D. Allwood1. 1. Materials Science and Engineering, The University of Sheffield, Sheffield, United Kingdom; 2. Nanoscience and Technology Centre, The University of Sheffield, Sheffield, United Kingdom; 3. Diamond Light Source Ltd, Didcot, United Kingdom; 4. ALBA Synchrotron Light Facility, Consorcio para la Construccion Equipamiento y Explotacion del Laboratorio de Luz Sincrotron, Barcelona, Spain


GB-05. Hardware Implementation of a Magnetic Tunnel Junction Based Bitstream Generator for Stochastic Computing. E. Becle1, L. Anghel1, G. Prenat1 and I. Prejbeanu1. 1. SPINtronique et Technologie des Composants, Grenoble, France

GB-06. Domain Wall Motion Based Neuromorphic Computing With Voltage Controlled Spin Neuron and Stochastic Magnetic Tunnel Junction Synapse. A.H. Lone1, S. Amara1 and H. Fariborzi1. 1. CEMSE (Integrated Circuits and Systems Group), King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
1. Research Center for Emerging Computing Technologies (RCECT), AIST, Tsukuba, Japan; 2. Department of Mechanoinformatics, Univ. of Tokyo, Tokyo, Japan

In-MRAM Processing Elements With Single-Step Convolution for Binary Neural Network. Z. Bian, J. Chen and H. Cai
1. Southeast University, Nanjing, China

1. Materials Science, The University of Sheffield, Sheffield, United Kingdom; 2. Computer Science, The University of Sheffield, Sheffield, United Kingdom

1. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Division for the Establishment of Frontier Sciences, Organization for Advanced Studies, Tohoku University, Sendai, Japan; 3. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 4. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 5. Center for Spintronics Research Network, Tohoku University, Sendai, Japan

Machine Learning With Stochastic Magnetic Domain Wall Based Neurons and Synapses. M.O. Ellis, A. Welbourne, S. Kyle, T. Hayward, D. Allwood and E. Vasilaki
1. Department of Computer Science, The University of Sheffield, Sheffield, United Kingdom; 2. Department of Material Science and Engineering, The University of Sheffield, Sheffield, United Kingdom

1. Univ. Grenoble Alpes, CEA, CNRS, SPINTEC, Commissariat a l’energie atomique et aux energies alternatives Siege administratif, Grenoble, France; 2. Alternative Computing Group, Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Institute for Research in Electronics and Applied Physics, University of Maryland at College Park, College Park, MD, United States; 4. Physical Measurement Laboratory, National Institute of Standards and Technology, Boulder, CO, United States

1. Dept. of Solid State Sciences, Universiteit Gent, Gent, Belgium; 2. Department of Physics, University of California San Diego, La Jolla, CA, United States; 3. Dept. of Physics, Johannes Gutenberg Universitat Mainz, Mainz, Germany; 4. Forschungszentrum Julich Peter Grunberg Institut, Julich, Germany
ON-DEMAND SESSIONS

Session GC
NEW APPROACHES IN COMPUTATIONAL MAGNETISM
Dieter Suess, Chair
Vienna University of Technology, Vienna, Austria

GC-01. Entropic Effects and Solitons in Thermally Activated Magnetic Transitions. (Invited) L. Desplat1,2, C. Vogler1, D. Suess1, R. Stamps1 and J. Kim1 1. Centre de Nanosciences et de Nanotechnologies, Palaiseau, France; 2. Institut de Physique et Chimie des Materiaux de Strasbourg, Strasbourg, France; 3. Universität Wien, Wien, Austria; 4. University of Manitoba, Winnipeg, MB, Canada

GC-02. On Quantifying the Topological Charge in Micromagnetics Using a Lattice-Based Approach. J. Kim1 and J. Mulders2 1. Centre for Nanoscience and Nanotechnology (C2N), CNRS, Université Paris-Saclay, Palaiseau, France; 2. Department of Solid State Sciences, Universiteit Gent, Gent, Belgium

GC-03. Theoretical Study of the Transport of Skyrmions at Room Temperature in Granular Racetracks. J. Castell-Queralt1, L. González-Gómez1, N. Del-Valle1 and C. Navau1 1. Physics, Universitat Autonoma de Barcelona, Barcelona, Spain


GC-05. Towards Reproducible Micromagnetic Workflows Using Ubermag. M. Beg1, M. Lang1, R. Pepper1 and H. Fangohr2,1 1. Faculty of Engineering and Physical Sciences, University of Southampton, Southampton, United Kingdom; 2. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany

GC-06. Machine Learning Methods for the Prediction of Micromagnetic Magnetization Dynamics. L. Exl1,2, N.J. Mauser3,2, S. Schaffer1,2, T. Schrefl1,2 and D. Suess1,4 1. Research Platform MMM Mathematics - Magnetism - Materials, Universität Wien, Wien, Austria; 2. Wolfgang Pauli Institute, Vienna, Austria; 3. Department of Integrated Sensor Systems, Donau-Universität Krems, Krems, Austria; 4. Faculty of Physics, Universität Wien, Wien, Austria

GC-07. Combined Micromagnetic Simulation and Machine Learning Approach to Analysis of Polycrystalline Bilayer System With Exchange Bias. N. Kulesh1, N. Permyakov1, V. Zverev1, A. Koshelev1, A. Bolychikin1 and V. Vasilykovskiy1 1. B. N. Yeltsin Federal University of the Urals, Ekaterinburg, Russian Federation
Multiclass Permanent Magnets Superstructure for Indoor Localization Using Artificial Intelligence. A. Ivry\textsuperscript{1}, E. Fisher\textsuperscript{2}, R. Alimi\textsuperscript{2}, I. Mosseri\textsuperscript{2} and K. Nahir\textsuperscript{2}. 1. Electrical Engineering, Technion Israel Institute of Technology, Haifa, Israel; 2. Technology Division, Soreq Nuclear Research Center, Yavne, Israel

Simulating Sintered Magnets Using the Full Demagnetization Tensor With MagTense. A.R. Insinga\textsuperscript{1} and R. Bjørk\textsuperscript{1}. 1. Department of Energy Conversion and Storage, Danmarks Tekniske Universitet, Lyngby, Denmark

Magnetostatic Field Computation in Thin Films Based on k-Space Fast Convolution With Truncated Green’s Function. S. Perna\textsuperscript{1}, V. Scalera\textsuperscript{1}, M. d’Aquino\textsuperscript{2}, N. Iserna\textsuperscript{1}, F. Villone\textsuperscript{1} and C. Serpico\textsuperscript{1}. 1. Universita degli Studi di Napoli Federico II, Napoli, Italy; 2. Universita degli Studi di Napoli Parthenope Dipartimento di Ingegneria, Napoli, Italy

Toward a Systematic Discovery of Artificial Functional Magnetic Materials. L. Botschi\textsuperscript{1} and P.D. Esquinazi\textsuperscript{1}. 1. Universitat Leipzig, Leipzig, Germany

Enhancing Domain Wall Motion in W/CoFeB/MgO Ultrathin Films Through He\textsuperscript{+}-Irradiation-Induced Crystallization. J.W. van der Jagt\textsuperscript{1}, M. Sall\textsuperscript{1}, N. Vernier\textsuperscript{2}, D. Mailly\textsuperscript{2}, M. Belmeguenai\textsuperscript{3}, Y. Roussigné\textsuperscript{3}, L. Herrera Diez\textsuperscript{2}, R. Juge\textsuperscript{1} and D. Ravelosona\textsuperscript{1,2}. 1. Spin-Ion Technologies, Palaiseau, France; 2. Centre de Nanosciences et de Nanotechnologies, Palaiseau, France; 3. Laboratoire des Sciences des Procedes et des Materiaux, Villeteanue, France

Exploration of Magnetic Nanotubes as new Spintronic Building Block. D. Tiwari\textsuperscript{1}, M. Jaber\textsuperscript{1}, M. Scheuerlein\textsuperscript{2}, M. Schölzitz\textsuperscript{1}, J. Hurst\textsuperscript{1}, A. Masseboeuf\textsuperscript{1}, L. Vila\textsuperscript{1}, J. Attané\textsuperscript{1}, W. Ensinger\textsuperscript{1}, M. Rioul\textsuperscript{1}, R. Belkhoul\textsuperscript{1}, D. Gusakova\textsuperscript{1} and O. Fruchart\textsuperscript{1}. 1. SPINtronique et Technologie des Composants, Grenoble, France; 2. Technical University of Darmstadt, Darmstadt, Germany; 3. Synchrotron SOLEIL, Gif-sur-Yvette, France

Innovative Use of Functional Segments in the Construction of a 3D Racetrack Memory Based on Cylindrical Nanowire Arrays. J. Rial\textsuperscript{1} and M.P. Proenca\textsuperscript{1,2}. 1. IFIMUP—Institute of Physics for Advanced Materials, Nanotechnology and Photonics, Department of Physics and Astronomy, Universidade do Porto Faculdade de Ciencias, Porto, Portugal; 2. Universidad Politecnica de Madrid Instituto de Sistemas Optoelectronicos y Microtecnologia, Madris, Spain
GD-04. Domain Wall Damping in Ultrathin Nanostripes With Dzyaloshinskii-Moriya Interaction. O.M. Volkov1, O. Pylypowskyi1, F. Kronast2, C. Abert1, E. Oliveros Mata1, P. Makushko1, M. Mawass3, V. Kravchuk4, D.D. Sheka5, J. Fassbender4 and D. Makarov1 1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany; 3. Faculty of Physics, Universität Wien Fakultät für Physik, Wien, Austria; 4. Institut für Theoretische Festkörperphysik, Karlsruher Institut für Technologie, Karlsruhe, Germany; 5. Tarasa Sevcenko National University of Kyiv, Kyiv, Ukraine


GD-06. Consequences of Pt/Co vs Co/Pt Deposition Order on Interfacial Magnetic Properties in Pt-Co-Ni Based Asymmetric Superlattices. N. Pandey1, M.P. Li1, H. Nembach2,3, J. Shaw2, M. De Graef1 and V.M. Sokalski1 1. Department of Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO, United States; 3. Department of Physics, University of Colorado Boulder, Boulder, CO, United States

GD-07. Origin and Optical Switching of Perpendicular Magnetization for Co100-xGdx/Pt Multilayers. T. Seki1,2, J. Wang1, Y. Lau1, Y. Takahashi2 and K. Takanashi1 1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. National Institute for Materials Science, Tsukuba, Japan

GD-08. RKKY Exchange Coupling Mediated Ultrafast all-Optical Switching of a Ferromagnet. J. Chatterjee1, D. Polley1, H. Jang1, A. Pattabi1, S. Salahuddin1 and J. Bokor1 1. Department of Electrical Engineering and Computer Sciences, University of California Berkeley, Berkeley, CA, United States

GD-09. All-Electrical Control of Nanoscale Domain Wall Devices Using Magnetic Tunnel Junction Read and Write. (Invited) E. Raymenants1,2, D. Wan1, K. Garello3,1, I. Asselberghs1, I. Radu1, S. Couet1 and V. Nguyen1 1. IMEC, Leuven, Belgium; 2. Katholieke Universiteit Leuven, Leuven, Belgium; 3. SPINtronique et Technologie des Composants, Grenoble, France
ON-DEMAND SESSIONS

Session GP
MRAM AND NEUROMORPHIC COMPUTING
(Poster Session)
Shouzhong Peng, Chair
Beihang University, Beijing, China


GP-02. Chirality-Reversible Multistate Switching via Bi-SOT in a Perpendicularly Magnetized System. W. Yang¹, C. Wan¹, Z. Yan¹, X. Zhang¹, M. Stebliy², X. Wang¹, C. Fang¹, C. Guo¹, Y. Xing¹, T. Ma¹, A. Ognev², A.S. Samardak², M. Tung³, G. Yu¹ and X. Han¹. 1. Institute of Physics, University of Chinese Academy of Sciences, Beijinng, China; 2. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 3. Material and Chemical Engineering Laboratory, Industrial Technology Research Institute, Hsinchu, Taiwan

GP-03. Increasing the Correlation Time of Spin Torque Oscillators Synchronised by Magnetostatic Interactions. S. Greaves¹. 1. RIEC, Tohoku University, Sendai, Japan

GP-04. Room Temperature Emulation of Synaptic Plasticity in Permalloy - Based Synaptic Transistor for Neuromorphic Computing. M. Peda¹, A.K. P.S.¹, W. Renshaw² and S. Piramanayagam³. 1. Department of Physics, Indian Institute of Science, Bangalore, India; 2. Division of Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore; 3. School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore, Singapore

GP-05. Current Induced Magnetization Switching in L1₀ FePt and Ta/FePt Films With Large Perpendicular Magnetic Anisotropy Through Spin-Orbit Torque. Y. Tao¹,², C. Sun¹,², Y. Jiao¹,², X. Hu¹,² and K. Dong¹,². 1. School of Automation, China University of Geosciences, Wuhan, Wuhan, China; 2. Hubei Key Laboratory of Advanced Control and Intelligent Automation for Complex Systems, Wuhan, China
Session HA
NEW TRENDS IN SKYRMIONICS: MATERIALS, DYNAMICS AND DETECTION TECHNIQUES
Riccardo Tomasello, Chair
Foundation for Research and Technology - Hellas, Heraklion, Greece

HA-01. Skyrmions in Chiral Magnetic Multilayers. (Invited)
K. Zeissler1, S. Finizio2, K. Shahbazi1, J. Massey1, F. Al Ma'mari1, A. Huxtable1, D. Bracher3, A. Kleibert2, S. Wintz2,3, S. Mayr2,4, T. Wettels3, A. V. Sadovnikov6, M. Rosamond1, E. Linfield1, T. Moore1, J. Raabe2, G. Burnell1 and C. Marrows1

HA-02. Colossal Topological Hall Effect at the Transition Between Isolated and Lattice-Phase Interfacial Skyrmions. (Invited)
C. Panagopoulos1
1. Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore

HA-03. Coexistence of Distinct Skyrmion Phases Observed in Hybrid Ferromagnetic/Ferrimagnetic Multilayers. (Invited)
A. Mandru1, O. Yildirim1, R. Tomasello4, P.T. Heistracher3, M. Penedo1, A. Giordano5, D. Suess3, G. Finocchio5 and H.J. Hug1
1. Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; 2. Department of Physics, University of Basel, Basel, Switzerland; 3. Faculty of Physics, University of Vienna, Vienna, Austria; 4. Institute of Applied and Computational Mathematics, Heraklion, Greece; 5. Department of Mathematical and Computer Sciences, University of Messina, Messina, Italy

HA-04. A Close Look at Skyrmions in Ultrathin Films and Synthetic Antiferromagnets. (Invited)
L. Aballe1
1. Experiments Division, ALBA Synchrotron Light Facility, Cerdanyola del Vallès, Spain
HA-05. Thermal Generation, Manipulation and Thermoelectric Detection of Skyrmions. (Invited) Z. Wang, M. Guo, H. Zhou, L. Zhao, T. Xu, R. Tomasello, H. Bai, Y. Dong, S. Je, W. Chao, H. Han, S. Lee, K. Lee, Y. Yao, W. Han, C. Song, H. Wu, M. Carpentieri, G. Finocchio, M. Im, S. Lin and W. Jiang. State Key Laboratory of Low-Dimensional Quantum Physics and Department of Physics, Tsinghua University, Beijing, China; 2. Institute of Microelectronics, Tsinghua University, Beijing, China; 3. Institute of Applied and Computational Mathematics, Foundation for Technological Research, Heraklion, Greece; 4. Center for X-ray Optics, E O Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. School of Materials Science and Engineering, Ulsan National Institute of Science and Technology, Ulsan, The Republic of Korea; 6. School of Physics, Peking University, Beijing, China; 7. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 8. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 9. Department of Mathematical and Computer Sciences, Universita degli Studi di Messina, Messina, Italy; 10. Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM, United States; 11. Frontier Science Center for Quantum Information, Tsinghua University, Beijing, China


ON-DEMAND SESSIONS

Session HB
SKYRMIONS: CONTROL AND MANIPULATION
Guoqiang Yu, Chair
Chinese Academy of Sciences, Beijing, China


HB-03. Nucleation of Metastable Skyrmion Lattices Following a Non-Equilibrium Laser-Induced Heating Path. P. Olleros-Rodríguez1, M.S. Strungaru2, S. Ruta2, P.I. Gavriloaea2, P. Perna1, R.W. Chantrell2 and O. Chubykalo-Fesenko3 1. Fundacion IMDEA Nanociencia, Madrid, Spain; 2. University of York Department of Physics, York, United Kingdom; 3. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain

HB-04. Skyrmion Density Modulation via Current-Induced Skyrmion-to-Stripe Transformation. C.C. Ang1, W. Gan1, G.D. Wong1 and W. Lew1 1. Physics & Applied Physics, Nanyang Technological University School of Physical and Mathematical Sciences Division of Physics and Applied Physics, Singapore, Singapore


HB-06. Real-Time Detection of Hall Effects: Measuring Current-Induced Magnetization Switching in the Time Domain. G. Sala1, V. Krizakova1, E. Grimaldi1, C. Lambert1, T. Devolder2 and P. Gambardella1 1. D-MATL, ETH Zurich, Zurich, Switzerland; 2. Centre de Nanosciences et de Nanotechnologies, Orsay, France

HB-07. Voltage-Controlled Skyrmion Chirality Switch. C. Fillion1, R. Kumar1, A. Fassatoui2, S. Pizzini1, L. Ranno3, S. Auflert3, I. Joumard1, O. Bouillé1, G. Gaudin1, L.D. Buda-Prejbeanu1, C. Baraduc1 and H. Béa1 1. SPINTEC, Grenoble, France; 2. Institut NEEL, Grenoble, France; 3. Antaios, Meylan, France

HB-08. Stabilization and Switching of Magnetic Merons in AuPt/Co/W(110) Epitaxial Thin Films. J.A. Peña García1, L. Camosi2, A. Fassatoui1, S. Pizzini1, O. Fruchart3, A. Thiaville4, S. Rohart4, F. Genuzio5, T. Mentes5, A. Locatelli5 and J. Vogel1 1. CNRS Institut Neel, Grenoble, France; 2. Institut Catala de Nanociencia i Nanotecnologia, Bellaterra, Spain; 3. SPINtronique et Technologie des Composants, Grenoble, France; 4. Laboratoire de Physique des Solides, Orsay, France; 5. Elettra Sincrotrone Trieste SCpA, Trieste, Italy
HB-09. Observation of Magnetic Skyrmion Bubbles in a van der Waals Ferromagnet Fe₃GeTe₂. B. Ding¹, Z. Li¹, H. Li¹, Y. Yao¹ and W. Wang¹ 1. Chinese Academy of Sciences Institute of Physics, Beijing, China

HB-10. Non-Linear Magnetic Response at Topological Defects in Helimagnetic FeGe. M. Stepanova¹,², E. Lysne¹,², P. Schoenher²,³, J. Masel¹, L. Köhler¹, A. Rosch⁶, N. Kanazawa⁷, Y. Tokura⁴, A. Quaimzadeh², A. Brataas⁹, M. Garst¹,⁵ and D. Meier¹,² 1. Department of Materials Science and Engineering, Norwegian University of Science and Technology, Trondheim, Norway; 2. Center for Quantum Spintronics, Norwegian University of Science and Technology, Norway; 3. University of New South Wales, Sydney, NSW, Australia; 4. RIKEN, Wako, Japan; 5. Technische Universität Dresden, Dresden, Germany; 6. Universität zu Köln, Köln, Germany; 7. The University of Tokyo, Bunkyo-ku, Japan; 8. Karlsruher Institut für Technologie, Karlsruhe, Germany; 9. ETH, Zurich, Switzerland


HB-12. Thermal Evolution of Magnetic Skyrmion Formation Mechanism in Chiral Multilayers. X. Chen¹, E. Chue², J. Kong³, H. Tan¹, H. Tan¹ and A. Soumyanarayanan²,³ 1. Institute of Materials Research and Engineering, Singapore, Singapore; 2. Department of Physics, National University of Singapore, Singapore; 3. Institute of High Performance Computing, Singapore, Singapore

HB-13. Stable Zero-Field Skyrmions in Magnetic Bilayers. S. Mallick¹, G. Pradhan¹,² and S. Rohart¹ 1. University Paris Saclay, Laboratoire de Physique des Solides, Orsay, France; 2. National Institute of Science Education and Research, Bhubaneswar, India

ON-DEMAND SESSIONS

Session HC
SKYRMIONS: DMI AND DYNAMICS
Chun-Yeol You, Chair
Daegu Gyeongbuk Institute of Science and Technology, Daegu,
The Republic of Korea

HC-01. Chirality Control in Ferromagnetic Multilayers Through Intra- and Interlayer DMI. (Invited) S. Pollard¹ 1. Physics and Materials Science, The University of Memphis, Memphis, TN, United States


HC-08. Spin Wave Radiation by a Topological Charge Dipole.
S.A. Diaz1, T. Hirosawa2, D. Loss3 and C. Psaroudaki4,5
1. Johannes Gutenberg Universität Mainz, Mainz, Germany; 2. University of Tokyo, Tokyo, Japan; 3. Universität Basel, Basel, Switzerland; 4. California Institute of Technology, Pasadena, CA, United States; 5. Universität zu Köln, Köln, Germany

HC-09. Ferromagnetic Resonance of Skyrmions in Thin Film Multilayers.
T. Srivastava1,2, Y. Sassi1, I. Ngouagnia Yemeli2, F. Ajejas1, A. Vecchiola1, K. Bouzehouane1, N. Reyren1, V. Cros1, J. Kim1, T. Devolder1 and G. de Loubens2 I. Unite Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Service de Physique de l’Etat Condense, Gif Sur Yvette, France; 3. Centre de Nanosciences et de Nanotechnologies, Orsay, France

HC-10. Skyrmion Diffusion in a Confined System.
S. Chengkun1,2, N. Kerber1,3, J. Rothhof2, Y. Ge2, K. Raab2, B. Seng2,4, M. Brems2, F. Dittrich2, R. Greber2, J. Závorka2, F. Kammerbauer2, T. Dohi2, J. Wang2, Q. Liu1, P. Virnau2,3 and M. Klau2 I. Key Laboratory for Magnetism and Magnetic Materials of the Ministry of Education, Lanzhou University, Lanzhou, China; 2. Institute of Physics, Johannes Gutenberg Universität Mainz, Mainz, Germany; 3. Johannes Gutenberg Universität Mainz Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 4. Institut Jean Lamour, UMR CNRS 7198, Université de Lorraine, Nancy, France

HC-11. Micromagnetic Study of Thermal Gradient-Driven Skyrmion Motion in Magnetic Multilayers.
E. Raimondo1, A. Giordano1, M. Carpentieri3, W. Jiang2, R. Tomasello4 and G. Finocchio1 I. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, Universita degli Studi di Messina, Messina, Italy; 2. State Key Laboratory of Low-Dimensional Quantum Physics and Department of Physics, Tsinghua University, Beijing, China; 3. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 4. Institute of Applied and Computational Mathematics, Idryma Technologies kai Ereunias, Heraklion, Greece

ON-DEMAND SESSIONS

Session HD
SKYRMIONS: POTENTIAL APPLICATIONS
Sebastian Diaz, Chair
Johannes Gutenberg Universität Mainz, Mainz, Germany

HD-01. Advanced Cognitive Computing Using Adaptive Spintronic Materials. (Invited) P. Jadaun1,2, C. Cui3 and J.C. Incorvia1 1. Electrical and Computer Engineering, The University of Texas at Austin, Austin, TX, United States; 2. IMEC, Leuven, Belgium

HD-02. Magnetic Skyrmions as Information Entropy Carriers.
R. Zivieri1 1. Istituto Nazionale di Alta Matematica Francesco Severi, Roma, Italy

HD-04. Ion-Irradiated Skyrmion Racetracks for Current Induced Skyrmion Guiding at Room Temperature. R. Juge1,2, K. Bairagi1, K. Rana1, M. Sall2, D. Mailly3, V. Pham4, Q. Zhang1, N. Sisodia1, M. Foerster4, L. Aballe1, M. Belmeguenai5, Y. Roussigné5, S. Auffret1, L.D. Buda-Prejbeanu1, D. Ravelosona2, G. Gaudin1 and O. Boulle1 1. Universite Grenoble Alpes, Saint-Martin-d’Heres, France; 2. Spin-Ion Technologies, Palaiseau, France; 3. Centre de Nanosciences et de Nanotechnologies, Orsay, France; 4. ALBA Synchrotron Light Facility, Barcelona, Spain; 5. CNRS, Laboratoire des Sciences des Procédés et des Matériaux, CNRS, Paris, France

HD-05. Positional Stability of Skyrmions via Pinning Sites in a Racetrack Memory. M. Morshed1, H. Vakili2 and A. Ghosh1,2 1. Department of Electrical and Computer Engineering, University of Virginia, Charlottesville, VA, United States; 2. Department of Physics, University of Virginia, Charlottesville, VA, United States


HD-07. Static Structures and Dynamics of Frustrated Topological Spin Textures. X. Zhang1, J. Xia2,8, M. Ezawa3, O. Tretiakov4, H.T. Diep5, Z. Hou6, W. Wang7, G. Zhao8, Y. Zhou2 and X. Liu1 1. Department of Electrical and Computer Engineering, Shinshu University, Nagano, Japan; 2. School of Science and Engineering, The Chinese University of Hong Kong, Shenzhen, Shenzhen, China; 3. Department of Applied Physics, The University of Tokyo, Tokyo, Japan; 4. School of Physics, The University of New South Wales, Sydney, NSW, Australia; 5. Laboratoire de Physique Théorique et Modélisation, Universite de Cergy-Pontoise, Cergy-Pontoise, France; 6. South China Academy of Advanced Optoelectronics, South China Normal University, Guangzhou, China; 7. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 8. College of Physics and Electronic Engineering, Sichuan Normal University, Chengdu, China

HD-08. Spin Orbit Torque Dynamics of Magnetic Skyrmions in GdCo Ferrimagnetic Thin-Films. L. Berges1, E. Haltz1, R. Weil1, J. Sampio1 and A. Mougin1 1. Laboratoire de Physique des Solides, Orsay, France
Impacts of Steady-State Domain Wall Configuration on Domain Wall Stiffness and Directional Domain Propagation in the Creep Regime. M.D. Kitcher1, J. Brock2, R. Medapalli2, E. Fullerton2 and V.M. Sokalski1. 1. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA, United States

**ON-DEMAND SESSIONS**

**Session HP**

**SKYRMIONS**

(Poster Session)

Soong-Geun Je, Chair
Chonnam National University, Gwangju, The Republic of Korea

**HP-01.** Voltage-Controllable Magnetic Skyrmion Dynamics for Spiking Neuron Device Applications. M. Zhu1, S. Cui1, Y. Qiu1, H. Yang1, G. Yu1 and H. Zhou1. 1. China Jiliang University, Hangzhou, China

**HP-02.** Evolution and Competition Between Chiral Spin Textures in Nano-Stripes With $D_{2d}$ Symmetry. J. Jena1, B. Göbel1, V. Kumar1, I. Mertig1, C. Felser2 and S. Parkin1. 1. Institute of Physics, Martin Luther University, Halle, Germany; 2. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 3. Max Planck Institute of Microstructure Physics, Halle, Germany

**HP-03.** Dynamic Property of Ferromagnetic Skyrmion in an in-Plane Magnetic Field. J. Guo1, J. Xia2, X. Zhang2, P. Pong3,1 and Y. Zhou3. 1. University of Hong Kong, Hong Kong; 2. The Chinese University of Hong Kong, Shenzhen, China; 3. New Jersey Institute of Technology, Newark, NJ, United States

**HP-04.** Static and Dynamic Behaviour of Double Skyrmions in Pt/Co/MgO Trilayer. F. Nasr1, C. Fillion1, O. Boule1, C. Baraduc1, H. Béa1 and L.D. Buda-Prefeau1. 1. SPINTronique et Technologie des Composants, Grenoble, France

**HP-05.** Tunable Microwave Properties of a Skyrmion in an Antidot Nanodisk Structure. A. Joseph1, C. Murapaka1, A. Haldar2 and B. Paikaray1. 1. Department of Materials Science and Metallurgical Engineering, Indian Institute of Technology Hyderabad, Hyderabad, India; 2. Department of Physics, Indian Institute of Technology Hyderabad, Hyderabad, India

**HP-06.** Potential Well Inducing the Motion of Skyrmion and Sensing Distance. F. Jin1,2, L. Yang1,2, W. Mo1,2, J. Song1,2, K. Dong1,2, Y. Hui1,2, L. Liu1,2, H. Wang1,2, Y. Wei1,2 and Y. Liu1,2. 1. China University of Geosciences School of Automation, Wuhan, China; 2. Hubet key Laboratory of Advanced Control and Intelligent Automation for Complex Systems, China University of Geosciences, Wuhan, China
HP-07. Nucleation, Annihilation and Stability of Skyrmions in Ultrathin Ir/Co/Pt Dots With Stochastic Fluctuations. F. Tejo\textsuperscript{1}, D. Cortés\textsuperscript{2}, J. Escrig\textsuperscript{3} and O. Chubykalo-Fesenko\textsuperscript{1} 1. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. Universiteit Utrecht, Utrecht, Netherlands; 3. Universidad de Santiago de Chile, Santiago de Chile, Chile

HP-08. Thermal Gradient Driven Dynamics of Neel Skyrmions in a Nanoracetrack. Y. Kumar\textsuperscript{1}, H. Saren\textsuperscript{1} and P. Das\textsuperscript{1} I. Physics, Indian Institute of Technology Delhi, New Delhi, India

HP-09. Simulations of Magnetoresitive Detection of Skyrmions. H. Chen\textsuperscript{1}, W. Bouckaert\textsuperscript{1,2} and S. Majetich\textsuperscript{1} I. Physics, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, EPFL, Pittsburgh, PA, United States

HP-10. Second Harmonic Detection of Chiral Spin Structures in a Magnetic Multilayer. Y. Wang\textsuperscript{1} and J.Q. Xiao\textsuperscript{1} I. University of Delaware, Newark, DE, United States

HP-11. Quantum Phase Transitions Under Pressure in a Chiral Itinerant Ferromagnet MnSi. Y. Wang\textsuperscript{1} and J.Q. Xiao\textsuperscript{1} 1. University of Delaware, Newark, DE, United States

ON-DEMAND SESSIONS

Session IA

MAGNETIC RECORDING: ENERGY-ASSISTED, MEDIA, HEAD, MODELS

Simon Greaves, Chair
Tohoku University, Sendai, Japan

IA-01. Characterizing the Oscillation Frequency of a Spin-Torque Oscillator (STO) by Measuring the Change of dc Resistance Upon Injection Locking to an External RF Magnetic Field. N. Asam\textsuperscript{1}, H. Suto\textsuperscript{1}, S. Tamaru\textsuperscript{1}, H. Sepehri-Amin\textsuperscript{1}, T. Nakatani\textsuperscript{1}, W. Zhou\textsuperscript{1}, H. Kubota\textsuperscript{1} and Y. Sakuraba\textsuperscript{1} 1. Research Center for Magnetic and Spintronics Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Corporate Research and Development Center, Toshiba Corporation, Kawasaki, Japan; 3. Research Center for Emerging Computing Technologies, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

IA-02. Double Magnet Master Media for Magnetic Printing Onto Energy-Assisted Magnetic Recording Media. T. Komine\textsuperscript{1} 1. Graduate School of Science and Engineering, Ibaraki University, Hitachi, Japan

IA-03. Depth Selective Magnetic Phase Coexistence in FeRh Thin Films. W. Griggs\textsuperscript{1}, B. Eggert\textsuperscript{2}, M. Liedke\textsuperscript{1}, M. Butterling\textsuperscript{2}, A. Wagner\textsuperscript{3}, U. Kentsch\textsuperscript{3}, E. Hirschmann\textsuperscript{3}, M. Grimes\textsuperscript{1,4}, A. Caruana\textsuperscript{3}, C. Kinane\textsuperscript{3}, H. Wende\textsuperscript{2}, R. Bali\textsuperscript{2} and T. Thomson\textsuperscript{1} 1. The University of Manchester, Manchester, United Kingdom; 2. Universitat Duisburg-Essen, Duisburg, Germany; 3. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 4. Paul Scherrer Institut, Villigen, Switzerland; 5. ISIS, Rutherford Appleton Laboratory, Didcot, United Kingdom
IA-04. Fabrication of FePt-BN/FePt-SiOx Dual-Layer Structure for HAMR Media on Corning Lotus™ NXT Glass Substrate. B. Zhou1, B. Varaprasad1, C. Xu1, M. Huang2, D.E. Laughlin1 and J. Zhu1. 1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Corning Research and Development Corporation, Corning Inc, Corning, NY, United States

IA-05. Union Bound Analysis for Spin-Torque Transfer Magnetic Random Access Memory With Channel Quantization. X. Zhong1, K. Cai1 and G. Song1. 1. Singapore University of Technology and Design, Singapore, Singapore

IA-06. Enable TDMR Gain With Convolution Neural Network Based Machine Learning Algorithm. Y. Qin1 and J. Zhu1. 1. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States

IA-07. Multilayer Perceptron Based Method for Track Misregistration Correcting in Dual-Reader Two-Track Reading BPMR Systems. K. Kanhunthod1 and C. Warisarn1. 1. King Mongkut’s Institute of Technology Ladkrabang College of Advanced Manufacturing Innovation, Bangkok, Thailand

IA-08. Effect of Lubricant Thickness on the Nanoscale Heat Transfer at the Head-Disk Interface. Q. Cheng1, S. Rajauria2, E. Schreck2, R. Smith2, Q. Dai2 and D. Bogy1. 1. Mechanical Engineering, University of California Berkeley, Berkeley, CA, United States; 2. Western Digital Corp, San Jose, CA, United States

IA-09. 317 Gb/in2 Recording Areal Density on Strontium Ferrite Tape. (Invited) S. Furrer1, P. Ebermann1, M. Lantz2, H. Rothuizen1, W. Haeberle1, G. Cherubini1, R.D. Cideciyan1, S. Tsujimoto2, Y. Sawayashiki2, N. Imaoka2, Y. Murata2, T. Ueyama2, Y. Akano2, T. Kaneko2, H. Suzuki2, M. Shirata2, K. Naoi2, T. Koike2 and H. Doshita2. 1. IBM Research, Rueschlikon, Switzerland; 2. Recording Media Research Laboratories, FUJIFILM Corporation, Odawara, Japan


IA-11. New Highly-Anisotropic Rh-Based Heusler Compound for Magnetic Recording New Highly-Anisotropic Rh-Based Heusler Compound for Magnetic Recording. Y. He1, G. Fecher1 and C. Felser1. 1. Max-Planck-Institut für Chemische Physik fester Stoffe, Dresden, Germany
Session IB
MAGNETIC FIELD SENSORS I
Paulo Freitas, Chair
International Iberian Nanotechnology Laboratory, Braga, Portugal

IB-01. Mechanically Shapeable Magnetic Field Sensor
Technologies. (Invited) G. Canon Bermudez1 1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany


IB-03. Directional Magnetic Field Response of FeCo/AIN Heterostructure Magnetoelectric Resonators. T.R. Mion1, B. Lefler2, S.P. Bennett1, M. Staruch1, K. Bussmann1, S. Yuasa2, U. Ebels3, M. Pannetier-Lecoeur2, C. Feron2, R. Lebrun1, P. Bortolotti1, A. Solignac2 and V. Cros1 1. Unité Mixte de Physique, CNRS, Thales, Université Paris-Saclay, 91767 Palaiseau, France; 2. SPEC, CEA-Saclay, CNRS, Université Paris-Saclay, 91191 Gif-sur-Yvette, France; 3. National Institute of Advanced Industrial Science and Technology, Research Center for Emerging Computing Technologies, Tsukuba, Ibaraki 305-8568, Japan; 4. Univ. Grenoble Alpes, CEA, CNRS, GINP, SPINTEC, 38054 Grenoble, France

IB-04. Spin-Torque Dynamics for Noise Reduction in Vortex-Based Sensors. M. Jotta Garcia1, J. Moulin2, S. Wittrock1, S. Tsunegi2, K. Yakuishi1, A. Fukushima1, H. Kubota2, S. Yuasa2, U. Ebels3, M. Pannetier-Lecoeur2, C. Feron2, R. Lebrun1, P. Bortolotti1, A. Solignac2 and V. Cros1 1. Unité Mixte de Physique, CNRS, Thales, Université Paris-Saclay, 91767 Palaiseau, France; 2. SPEC, CEA-Saclay, CNRS, Université Paris-Saclay, 91191 Gif-sur-Yvette, France; 3. National Institute of Advanced Industrial Science and Technology, Research Center for Emerging Computing Technologies, Tsukuba, Ibaraki 305-8568, Japan; 4. Univ. Grenoble Alpes, CEA, CNRS, GINP, SPINTEC, 38054 Grenoble, France

IB-05. Sub-nT Resolution of Single Layer Sensors Based on the AMR Effect in Single Layer La2/3Sr1/3MnO3 Thin Films. L. Enger1, S. Flament1, I. Bhatti1, B. Guillet1, M. Lam Chok Sing1, V. Pierron1, S. Lebargy1, T. Gonzalez2, J. Camarero2, R. Miranda2, P. Perna2 and L. Méchin1 1. Ensciencen, CNRS UMR6072, Ensciencen, Univicaen, Cuen, France; 2. IMDEA Nanociencia, Campus de Cantoblanco, Madrid, Spain

IB-06. Sensitivity and Noise of Multiwire Parallel Fluxgate Sensors. P. Ripka1, D. Hrakova1, V. Grim1 and M. Mizraei1 1. Electrical Engineering, Czech Technical University in Prague, Prague, Czechia

IB-07. Control of Chirality and Hysteresis in Asymmetric Vortex-Based TMR Sensors. S. Dounia1, S. Teresi2, J. Alvarez-Hérault1, L. Lombardi1, J.R. Childress1, I. Prejeanu1 and C. Baraduc1 1. Crocus Technology Grenoble, Grenoble, France; 2. SPINtronique et Technologie des Composants, Grenoble, France
IB-08. Magnetic Viscosity in High Precision Magnetoresistive Field Sensors. J.D. Watts1, J. Davies1, J. Novotny1, D. Huang1 and P. Eames1 1. Advanced Technology Group, NVE Corp, Eden Prairie, MN, United States

IB-09. Investigation of a Magneto-Inductive Sensor for Vector Magnetic Field Measurements. H. Liu1, X. Wang1, C. Zhao1, J. Zhu1, J. Ge1, H. Dong1 and Z. Liu2 1. China University of Geosciences, Wuhan, China; 2. The University of British Columbia, Vancouver, BC, Canada

IB-10. Tunnel Magnetoresistance Sensors With CoFeBTa Amorphous Soft-Magnetic Sensing Layer. T. Nakatani1, M. Rasly1, J. Li1, H. Sepetehri-Amin1, H. Sukeyawa1 and Y. Sakuraba1 1. National Institute for Materials Science, Tsukuba, Japan


IB-12. Magnetic Flux Synchronous Motion Modulation for Improving the Low-Frequency Magnetic Field Detection Limit of Magnetoresistive Sensor Using MEMS Resonators. Z. Liu1, X. Zhou1 and X. Zou1 1. State Key Laboratory of Transducer Technology, Aerospace Information Research Institute, CAS, Beijing, China; 2. School of Electronic, Electrical and Communication Engineering, University of Chinese Academy of Sciences, Beijing, China

IB-13. Influence of Preparation Conditions on Long-Term Stability of Magnetoresistive Properties of Nanostructured La-Sr-Mn-Co-O Films Grown by PI MOCVD. N. Zarauiskiene1,2, V. Rudokas1, M. Vagner1,3, K. Motiejaitis3, M. Koliada1, V. Stankevic1, S. Kersulis1, D. Pavilonis1 and V. Plausinaitiene1,3 1. Functional Materials and Electronics, Center for Physical Sciences and Technology, Vilnius, Lithuania; 2. Faculty of Electronics, Vilnius Gediminas Technical University, Vilnius, Lithuania; 3. Faculty of Chemistry and Geosciences, Vilnius University, Vilnius, Lithuania

ON-DEMAND SESSIONS

Session IC
NON-DESTRUCTIVE EVALUATION & OTHER SENSORS I
Gui Yun Tian, Chair
Newcastle University, Newcastle, United Kingdom

IC-01. A Low-Frequency Eddy Current Probe Based on Miniature Fluxgate Array for Defect Evaluation in Steel Components. M. Saari1,2, N. Nadzri1, M. Zaini1, M. Sulaiman1 and K. Tsukada3 1. Faculty of Electrical & Electronic Engineering Technology, Universiti Malaysia Pahang, Pekan, Malaysia; 2. Automotive Engineering Centre, Universiti Malaysia Pahang, Pekan, Malaysia; 3. Graduate School of Interdisciplinary Science and Engineering in Health System, Okayama University, Okayama, Japan
IC-02. Examination of Insertion Type Electromagnetic Inspection for Outer Side Defect on Ferromagnetic Steel Tube by Speed Effect Using Only Static Magnetic Field. M. Tohara1 and Y. Gotoh2 1. Technical Development Department, Toa Non-Destructive Inspection Co., Ltd., Kitakyushu, Japan; 2. Division of Mechatronics, Department of Innovative Engineering, Oita University, Oita, Japan

IC-03. Linear Position Sensor Using Magnetically Bistable Microwire. R. Jure1,3, P. Jacko1,4, L. Gadun1,2, L. Hvizdos1, J. Gamecova1 and R. Varga1,2 1. Rymagnetics a.s., Kosice, Slovakia; 2. CPM TIP UPJS, Kosice, Slovakia; 3. Faculty of Aeronautics, TUKE, Kosice, Slovakia; 4. Faculty of Electrical Engineering and Informatics, TUKE, Kosice, Slovakia

IC-04. Effect of Magnetic Circuit on Pulse Voltage Generated by Wiegand Sensor in a Linear Positioning System. H. Lien1 and J. Chang1 1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan

IC-05. A Magnetization System for Spindle Axial Thermal Elongation Measurements. K. Peng1 and J. Chang1 1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan

IC-06. A Simplified 2D Equivalent Model for Magnetic Wire Array. M. Mirzaei1, P. Ripka1 and V. Grim1 1. Czech Technical University in Prague, Praha, Czechia


ON-DEMAND SESSIONS

Session ID MAGNETICS FOR IOT & EMERGING APPLICATIONS
Galina Kurlyandskaya, Chair
Universidad del Pais Vasco - Campus Bizkaia, Leioa, Spain

ID-01. MAGNETIQUE and the Virtual Daum, two out-Reach Activities Carried out in a Research Laboratory: What About Researchers’ Engagement in Knowledge Sharing? . (Invited) H. Fischer4, S. Andrieu1, C. Bellourdi1, C. Bonnet1, C. Chatelaëni1, K. Dumesnil1, J. Gorchon1, T. Hauet1, M. Héni1, D. Hennequin1, S. Heuraux1, D. Lacour1, G. Lengaigne1, S. Mangin1, P. Molho2, F. Montaigne1, S. Petit-Watelot1, D. Pierre1, J. Rojas-Sanchez2, C. Schlauder1 and P. Schmitt1 1. Institut Jean Lamour, Nancy, Grand Est, FR, academic/chem, Nancy, France; 2. Institut NEEL, Grenoble, France; 3. Laboratoire de Physique des Lasers Atomes et Molecules, Villeneuve-d’Ascq, France; 4. Laboratoire de Physique et Chimie Théoriques, Nancy, France

ID-03. Evaluation of Magnetoimpedance in Narrow NiFe/Al/NiFe Thin Films for Secured Packaging. T. Sohier1, J. Michel1, S. Borel1, J. Souriau1, G. Simon1 and A. Tria1. I. CEA, Commissariat à l’énergie atomique et aux energies alternatives, Grenoble, France


ID-05. Oxidized Permalloy Films as a Sensitive Element for Magneto-Optical Hydrogen Gas Detection. D. Kulikova1,2, K. Afanasiev1, I. Bykov1 and A. Baryshev1. 1. All-Russian Research Institute of Automation, Moscow, Russian Federation; 2. Lomonosov Moscow State University, Moscow, Russian Federation; 3. Institute of Theoretical and Appropriate electrodynamics of RAS, Moscow, Russian Federation


ID-08. Broadband RF Detection and GHz Modulation Rates Enabled by Joule Heating in Perpendicular Anisotropy Magnetic Tunnel Junctions. A. Sidi El Valli1, V. Iurchuk1, A. Litvinenko1, I. Bendjeddou2, N. Lamard1, J. Langer4, J. Wrona1, L. Vila1, R. Sousa1, L.L. Prejbeanu1, B. Diény1 and U. Ebels1. 1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, SpinTec, Grenoble, France; 2. Grenoble Images Parole Signal Automatique, Saint Martin d’Heres, France; 3. Commissariat a l’énergie atomique et aux energies alternatives Laboratoire d’électronique et de technologies de l’information, Grenoble, France; 4. Singulus Technologies AG, Kahl am Main, Germany

THz Periodic Array Sensor Design. A. Erogulu and B. Chowdhury. 1. Electrical and Computer Engineering, North Carolina Agricultural and Technical State University, Greensboro, NC, United States

Electromagnetic Wave Generation in a Ferromagnet due to Transitions Between Spin Subbands. E. Karashtin. 1. Institute for Physics of Microstructures RAS, Niznij Novgorod, Russian Federation

Cavity Backed Spiral Antenna With Improved Gain. R. Durbha and M. Afzali. 1. Electrical and Computer Engineering, Tufts University, Medford, MA, United States

ON-DEMAND SESSIONS

Session IE
MAGNETORESISTANCE
Xia Hong, Chair
University of Nebraska-Lincoln, Lincoln, NE, United States

Intrinsic Mechanism for Anisotropic Magnetoresistance and Experimental Confirmation in CoFe Alloys. (Invited) Z. Yuan. 1. Department of Physics, Beijing Normal University, Beijing, China


Large Magnetoresistance in Symmetry-Filtering Scandium Nitride Junctions Using First Principles. V.C. Rogers, S. Karki, P. Jadaun, D.S. Marshall and J.C. Incorvia. 1. Electrical and Computer Engineering Department, The University of Texas at Austin, Austin, TX, United States; 2. TAE Technologies Inc, Foothill Ranch, CA, United States; 3. SEMTE Dept., Arizona State University, Tempe, AZ, United States

Giant Tunnel Magnetoresistance up to 417% at Room Temperature Using Fe/MgO/Fe Magnetic Tunnel Junctions. T. Scheike, Q. Xiang, Z. Wen, H. Sukegawa, T. Ohkubo, K. Hono and S. Mitani. 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan

High Tunnel Magnetoresistance in Ultrathin MnGa-Based Perpendicular Magnetic Tunnel Junctions Utilizing Ferromagnetic bcc-CoMn Interlayers. K. Suzuki, T. Ichinose, R. Monma and S. Mizukami. 1. AIMR, Tohoku University, Sendai, Japan

Giant Tunnel Magnetoresistance up to 417% at Room Temperature Using Fe/MgO/Fe Magnetic Tunnel Junctions. T. Scheike, Q. Xiang, Z. Wen, H. Sukegawa, T. Ohkubo, K. Hono and S. Mitani. 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan

High Tunnel Magnetoresistance in Ultrathin MnGa-Based Perpendicular Magnetic Tunnel Junctions Utilizing Ferromagnetic bcc-CoMn Interlayers. K. Suzuki, T. Ichinose, R. Monma and S. Mizukami. 1. AIMR, Tohoku University, Sendai, Japan
ON-DEMAND SESSIONS

Session IF
MAGNETORESISTANCE, MAGNETOIMPEDANCE AND HALL EFFECTS IN HOMOGENEOUS MATERIALS
Yong-Chang Lau, Chair
Tohoku University, Sendai, Japan

IF-01. Nonlinear Spintronics in Quantum Materials With Inversion Symmetry Breaking. (Invited)
P. He1, S. Zhang2, G. Vignale3 and H. Yang4
1. Institute for Nanoelectronic devices and Quantum computing, Fudan University, Shanghai, China; 2. Department of Physcis, Case Western Reserve University, Cleveland, OH, United States; 3. Department of Physics and Astronomy, University of Missouri, Columbia, MO, United States; 4. Department of Electrical and Computer Engineering, National University of Singapore, Singapore

IF-02. Magneto-Transport Properties in Mn4-xNixN Films With Large Current Induced Domain Wall Mobility and Investigation in Their Large Anomalous Hall Effect.
T. Komori1, H. Mitarai1, K. Toko1 and T. Suemasu1
1. Institute of Applied Physics, Tsukuba University, Tsukuba, Japan

IF-03. Anomalous Hall Effect in Anisotropic Weyl Semimetals.
C. Yesilyurt1, Z. Siu2, F. Ozaydin3 and M.B. Jalil2
1. Department of Physics, Istanbul University, Istanbul, Turkey; 2. Electrical and Computer Engineering, National University of Singapore, Singapore; 3. Institute for International Strategy, Tokyo International University, Tokyo, Japan

IF-04. Large Anomalous Hall Angle in a Topological Semimetal Candidate TbPtBi. J. Chen1,2, H. Li3, B. Ding2, H. Zhang2, X. Xi3 and W. Wang2,1
1. Department of Physics, Istanbul University, Istanbul, Turkey; 2. Institute of Materials Research, Tohoku University, Sendai, Japan; 3. PRESTO, Japan Science and Technology Agency, Saitama, Japan

IF-05. Efficient Tuning of Electronic, Transport, and Thermoelectric Properties of Weyl Semimetal Co2MnAl1-xSix Composition-Spread Thin Film.
R. Modak1, Y. Miura1, S. Ueda1, K. Uchida1,2 and Y. Sakuraba1,3
1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Institute for Materials Research, Tohoku University, Sendai, Japan; 3. PRESTO, Japan Science and Technology Agency, Saitama, Japan

IF-06. Micromagnetic Study of Strain-Induced Magnetization Switching in FeGaB Nanomagnets for Self-Biased MRAM Applications.
P. Pathak1 and D. Mallick1
1. Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India

IF-07. Huge Room Temperature Negative Magneto Capacitance in La0.7Pb0.3Mn0.4Fe0.6O3-δ and Positive Magneto Capacitance in La0.7Pb0.3Mn0.4Ti0.6O3-δ.
P. Singh1 and B. Singh1
1. University of Allahabad Centre of Material Sciences, Allahabad, India
ON-DEMAND SESSIONS

Session IG
MULTILAYERED AND PATTERNED FILMS, AND EXCHANGE BIAS
Aidan Hindmarch, Chair
University of Durham, Durham, United Kingdom

IG-01. Nanoscale Manipulation of Magnetic Domains by Interfacial Strain-Induced Proximity. J. Rodriguez Alvarez¹, I. Valmianski², A. Fraile Rodríguez¹, M. García del Muro¹, C. Wolowiec², F. Kronast¹, J. Ramírez³, I.K. Schuller², A. Labarta¹ and X. Batlle¹ 1. Departament de Física de la Matèria Condensada i Institut de Nanociència i Nanotecnologia (IN2UB), Universitat de Barcelona, Barcelona, Spain;
2. Department of Physics and Centre for Advanced Nanoscience, University of California San Diego, La Jolla, CA, United States;
3. Helmholtz-Zentrum Berlin fur Materialien und Energie GmbH, Berlin, Germany; 4. Department of Physics, Universidad de los Andes, Bogota, Colombia

IG-02. Magnetic Anisotropy, Interlayer Coupling and Dzyaloshinskii-Moriya Interaction in Epitaxial W/Co/Pt Multilayers. S.K. Jena¹, M.M. Jakubowskia¹, E. Milinska¹, A. Pietruczik¹, P. Aleszkiewicz¹ and A. Wawro¹ 1. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland

IG-03. Structural and Magnetic Characterization of Epitaxial Co(10.0)/Pt(110) Multi-Layers for Future Anisotropic DMI Systems Based on C₃ᵥ Symmetry. M.D. Kitcher¹, Y. Liu¹, M. De Graef¹ and V.M. Sokalski¹ 1. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States

IG-04. Skyrmions in 3D Soft Magnetic Nanodots With no Dzyaloshinskii-Moriya Interactions. E. Berganza², J. Fernandez-Roldan¹, M. Jaafar³, A. Asenjo¹, K. Guslienko⁵ and O. Chubykalo-Fesenko¹ 1. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. Institute of Nanotechnology, Eggenstein-Leopoldshafen, Germany;
3. Universidad de Oviedo, Oviedo, Spain; 4. Universidad Autonoma de Madrid, Madrid, Spain; 5. Universidad del Pais Vasco - Campus Gipuzkoa, Donostia, Spain

IG-05. Exchange Spring Co-Rich CoP Nanomagnetic Thin Films. A. Samanta¹,² and S. Roy¹,² 1. Micropower Systems & Nanomagnetics Group, Micro-Nano-Systems Center, Tyndall National Institute, Cork, Ireland; 2. Department of Physics, University College Cork, Cork, Ireland

IG-06. Competing Magnetic Anisotropies and Spin Reorientation in Phase-Segregated Single Layer Ferrimagnetic FeGd Films. A. Chanda¹, J.E. Shoup¹, N. Schulz², D. Arena² and H. Srikanth¹ 1. Physics Department, University of South Florida, Tampa, FL, United States
Beating the Limit of Ordering Temperature of FeO With Antiferromagnetic Proximity in FeO/CoO. M. Szpytma1, A. Koziori Rachwal2, J. Korecki1,2, M. Slezak1, P. Drozdzi2, W. Janus3, H. Nayeef2, M. Zajac1 and T. Slezak1 1. AGH University of Science and Technology, Krakow, Poland; 2. Polish Academy of Sciences, Institute of Catalysis and Surface Chemistry, Krakow, Poland; 3. National Synchrotron Radiation Centre Solaris, Jagiellonian University, Krakow, Poland

Disorder by Design in an Artificial Spin Ice With Dipolar Interactions: an Energetic Analysis. M. Di Pietro Martínez1 1. Physique du Métal, Sciences et Ingenierie des Materiaux et des Procédés, Saint Martin d’Hères, France

Magnetisation Asymmetry in Exchange Bias Systems. J. Gompertz1, R. Carpenter2, S. Hassan3 and K. O’Grady1 1. Physics, University of York, University of York, York, North Yorkshire, GB, York, United Kingdom; 2. IMEC, Leuven, Belgium; 3. Seagate Technology LLC, Cupertino, CA, United States


Tailoring Interfacial Phenomena in Hybrid v2O3/Co Bilayers. J.M. Diez1,2, J.L. Fernández Cuñado1, P. Perna2, P. Lapa3, A. Bollero2, R. Miranda1,2, I.K. Schuller1 and J. Camarero1,2 1. Física de la Materia Condensada, Universidad Autonoma de Madrid, Madrid, Spain; 2. Fundacion IMDEA Nanociencia, Madrid, Spain; 3. Department of Physics and Center of Advanced Nanoscience, University of California San Diego, La Jolla, CA, United States

Observation of Training Effect in Fe Thin Film Implanted With F+ Ions. S. Sen1,2, A. Gupta1, V. Reddy4 and R. Gupta1 1. School of Instrumentation, Devi Ahilya University, Khandwa Road Indore-452017, India; 2. Department of Physics, Maharaja Bhaj Government P.G. College, Dhar-454001, India, Dhar, India; 3. Centre for Spintronic Devices, Amity University, Noida, India; 4. UGC DAE CSR Indore Centre, Khandwa Road, Indore-452017, India, Indore, India
IH-01. Giant Perpendicular Magnetic Anisotropy in Mo-Based Double-Interface Free Layer Structure for Advanced Magnetic Tunnel Junctions. H. Cheng1,2, J. Chen3, S. Peng1,2, B. Zhang4, Z. Wang1, D. Zhu1, K. Shi1, S.R. Eimer1,2, X. Wang1, Z. Guo1, Y. Xu1,2, D. Xiong3, K. Cao1 and W. Zhao1,2 1. Fert Beijing Institute, Beijing Advanced Innovation Center for Big Data and Brain Computing, School of Integrated Circuit Science and Engineering, Beihang University, Beijing, China; 2. Hefei Innovation Research Institute, Beihang University, Hefei, China

IH-02. Tuning the Inplane Anisotropy of CoFeB Films. S. Scheibler1,2, O. Yildirim1, A. Mandru1 and H.J. Hug1,3 1. Magnetic & Functional Thin Films Lab 203, Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; 2. ETH Zurich, Zurich, Switzerland; 3. Department of Physics, University of Basel, Basel, Switzerland

IH-03. Magnetization Processes and Magnetic Domain Structures in Ta/CoFeB/MgO Stacks. A.K. Dhiman1, T. Dohi2, W. Dobrogoski2, Z. Kurant1, I. Sveklo1, S. Fukami2, H. Ohno2 and A. Maziewski1 1. Department of Physics, Uniwersytet w Białymstoku, Bialystok, Poland; 2. Tohoku University Denki Tsushin Kenkyujo, Sendai, Japan

IH-04. Effect of Annealing Temperature on Spectroscopic g Factor at CoFeB/MgO Interface. S. Tamaru1, T. Yamamoto1, T. Nozaki1, K. Yakushiji1, H. Kubota1, A. Fukushima1 and S. Yuasa1 1. RCECT, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan


IH-06. Creep of Domain Walls in Epitaxial Pd/Co/Pd(111) Trilayers. N. Sarnavskiy1, A. Kozlov1, M. Stebliy1 and A. Davydenko1 1. Far Eastern Federal University, Vladivostok, Russian Federation

IH-07. Tailoring of Magnetic Anisotropy in Co and Amorphous CoFeB Thin Films Through Glancing Angle Deposition. K. Bukharia1, A. Gupta1 and P. Pandit2 1. Amity University, Noida, India; 2. Deutsches Elektronen-Synchrotron, Hamburg, Germany
High-Coercive Hexagonal MnBi Micro-Islands With Tunable Magnetic Anisotropy and Stripe Magnetic Domain Patterns. M. Villanueva1, C. Navío1, E. Sanchez2, P. Pedraz2, P. Olleros-Rodríguez2, L. Zha3, P. Perna1, J. Camarero1,3, J. Yang4, P.S. Normile2, J. de Toro2 and A. Bollero1 1. Fundacion IMDEA Nanociencia, Madrid, Spain; 2. IRICA, Universidad de Castilla-La Mancha, Ciudad Real, Spain; 3. Condensed Matter Physics Department, Universidad Autonoma de Madrid, Madrid, Spain; 4. State Key Laboratory for Mesoscopic Physics, School of Physics, Peking University, Beijing, China

Epitaxial Ferrimagnetic Mn4N Thin Films on GaN by Molecular Beam Epitaxy. Z. Zhang1, Y. Cho1, M. Gong1, S. Ho1, J. Singhal1, J. Encomendero1, X. Li1, H. Lee1, H.G. Xing1 and D. Jena1 1. Cornell University, Ithaca, NY, United States

Strain and Ferromagnetic Proximity Induced Spin Reorientation Transition in NiO. W. Janus1, A. Kozioł Rachwał1, M. Slezak1, M. Zajac2, P. Drozdz1, M. Szytyma1, H. Nayyef1 and T. Sležak1 1. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Krakow, Poland; 2. National Synchrotron Radiation Centre SOLARIS, Jagiellonian University, Krakow, Poland

Tailoring the Magnetic Anisotropy and Controlling the Spin Orientation in Antiferromagnetic NiO(111) Films on Fe(110). H. Nayyef1, M. Slezak1, P. Drozdz1, W. Janus1, A. Kozioł Rachwał1, M. Szytyma1, M. Zajac2, T. Mentes1, F. Genuzio3, A. Locatelli3 and T. Sležak1 1. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Krakow, Poland; 2. National Synchrotron Radiation Centre SOLARIS, Jagiellonian University, Krakow, Poland; 3. Elettra - Sincrotrone Trieste, Basovizza, Italy

Domain Wall Pinning in Epitaxial Spinel Ferrites Grown on Ru. S. Ruiz Gómez1, A. Mandziak1,2, C. Munuera3, A. Quesada3, J. Prieto3, M. Foerster1, L. Aballe1 and J. De La Figuera1 1. Alba Synchrotron, Cerdanyola del valles, Spain; 2. SOLARIS National Synchrotron Radiation Centre, Cracow, Poland; 3. Consejo Superior de Investigaciones Científicas, Madrid, Spain

Uranium-Based Spintronics. E.R. Gilroy1,2, M. Wu2, M. Gradhand2, R. Springell2 and C. Bell2 1. The University of Sheffield, Sheffield, United Kingdom; 2. University of Bristol, Bristol, United Kingdom

Thermally Activated Processes for Ferromagnet Intercalation in Graphene-Heavy Metal Interfaces. A. Gudín Holgado2, J.M. Diez2,1, A. Anadón2, C. Ayani2, P. Olleros-Rodriguez2, F. Ajejas2,1, A. Army2, R. Guerrero2, F. Calleja2, J. Camarero2,3, R. Miranda2,3 and P. Perna2 1. Instituto Nicolás Cabrera & IFIMAC, Universidad Autonoma de Madrid, Madrid, Spain; 2. Nanoscience, Instituto Madrileño de Estudios Avanzados, Madrid, Spain

Withdrawn Monday 139
F. Akagi1, Y. Sakamoto1 and N. Matsushima1 1. Kogakuin Univ., Tokyo, Japan

IP-02. Correlation Among Lattice Strain of MgO Underlayer at Hetero-Interface Between MgO/FePt, Degree of Order, and Ratio of c-Axis Parallel to Normal for FePtGranular Film.  
T. Saito1, K. Tham2, R. Kushibiki2, T. Ogawa1 and S. Saito1 1. Tohoku University, Sendai, Japan; 2. Tanaka Kikinzoku Kogyo Kabushiki Kaisha, Chiyoda-ku, Japan

IP-03. Effect of FePt-C Nucleation Layer on Magnetic Properties and Nanostructure for FePt-Oxide/FePt-C Stacked Media.  
K. Tham1, T. Saito2, R. Kushibiki1, T. Ogawa1 and S. Saito2 1. Tanaka Kikinzoku Kogyo Kabushiki Kaisha, Chiyoda-ku, Japan; 2. Tohoku University, Sendai, Japan

H. Saito1 and F. Akagi2 1. Department of Electrical and Electronic Engineering, Faculty of Engineering, Kogakuin University, Shinjuku-ku, Japan; 2. Department of Applied Physics, School of Advanced Engineering, Kogakuin University, Shinjuku-ku, Japan

IP-05. Reliability Ratio-Based Serial Scheduling of LDPC Decoder for Turbo Equalization Schemes.  
S. Khittiwitchayakul1, W. Phakphisut1 and P. Supnithi1 1. School of engineering, King Mongkut’s Institute of Technology Ladkrabang, Bangkok, Thailand

IP-06. An Improvement to Factor Graph-Based Detector for Bit Patterned Media Recording.  
T. Sopon1, P. Supnithi2 and S. Pilabut1 1. Department of Electronic Engineering, Rajamangala University of Technology Isan, Nakhon Ratchasima, Thailand; 2. Department of Telecommunication Engineering, King Mongkut’s Institute of Technology Ladkrabang, Bangkok, Thailand; 3. Department of Information Technology, Nakhon Ratchasima College, Nakhon Ratchasima, Thailand

IP-07. A Study on Iterative Decoding by Neural Network Detector in SMR System.  
M. Nishikawa1, Y. Nakamura1, Y. Kanai2, H. Osawa1 and Y. Okamoto1 1. Ehime University Kogakubu University in Rikogakuen Kenkyuka, Matsuyama, Japan; 2. Niigata Koka University, Kashiwazaki, Japan
IP-08. A Study of Multi-Dimensional Magnetic Recording System With Double Recording Layers. Y. Nakamura1, M. Nishikawa1, Y. Kanai2 and Y. Okamoto1. 1. Graduate School of Science and Engineering, Ehime University, Matsuyama, Japan; 2. Department of Information and Electronics Engineering, Nipgata Koka University, Kashiwazaki, Japan

IP-09. Investigation of Ferrimagnetic Domain Wall Motion Behavior in GdFeCo Through the Anomalous Hall Effect. N. Hai1, Z. Chen1, R.C. Bhatt2, L. Ye2, T. Wu2, L. Horng1 and J. Wu1. 1. Physics, National Changhua University of Education, Changhua, Taiwan; 2. Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Taiwan

IP-10. Very Fast Current Driven and Reverse Domain Wall Motion in a Rare-Earth Free Compensated Ferrimagnetic Mn0.83Ni0.17, S. Ghosh1,2, T. Komori2, A. Hallal1, J.A. Peña Garcia1, T. Gushi1,2, T. Hirose2, H. Mitari2, H. Okuno3, J. Vogel3, M. Chshiev1, J. Attané1, L. Vila1, T. Suemasu2 and S. Pizzini2. 1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG-Spintec, Grenoble, France; 2. Institute of Applied Physics, Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan; 3. Univ. Grenoble Alpes, CNRS, Institut Néel, Grenoble, France; 4. Univ. Grenoble Alpes, CEA, IRIG-MEM, Grenoble, France

IP-11. Nonvolatile Spintronic 2-to-1 Multiplexer Based on Current-Driven Domain Wall Propagation. X. Zhang1 and Z. Lu1. 1. School of Materials Science and Engineering, Tsinghua University School of Materials Science and Engineering, Beijing, China

IP-12. Domain Wall Pinnning Probability in Different Width of sub-Micron-Wire With a Notch. D. Shiu1, C. Wei1, K. Lai1, Z. Gao1, Y. Li2, Y. Kao1 and L. Horng1. 1. Physics, National Changhua University of Education, Changhua, Taiwan; 2. Graduate Institute of Photonics, National Changhua University of Education, Changhua, Taiwan

ON-DEMAND SESSIONS

Session IQ
ELECTRIC FIELD EFFECTS AND MAGNETORESISTANCE (Poster Session)
Hélène Béa, Chair
CEA-SPINTEC, Grenoble, France

IQ-01. Low-Voltage-Pulse Control of the Transport Properties of Antiferromagnetic La0.85Sr0.15MnO3 Thin Film via Ferroelectric P(VDF-TrFE) Copolymer. X. Zhao1, H. Wong1, Y. Liu1, S. Ng1, J. Liang1, K. Lam1, W. Cheng1, C. Mak1 and C. Leung1. 1. Applied Physics, The Hong Kong Polytechnic University, Kowloon, Hong Kong; 2. College of Electronic Information and Mechatronic Engineering, Zhaqong University, Zhaqong, China

Monday 141
IQ-02. Influence of BiFeO3 Phase on Perpendicular Magnetic Anisotropy in Co/Pt. Y. Ji1,2, P. Shepley1, Z. Xu2, L. Chen2 and T. Moore1 1. Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Physics, Southern University of Science and Technology, Shenzhen, China


IQ-04. Field-Free Switching of Perpendicular Magnetization and Memristive Properties Through Spin-Orbit Torque in FePt/[TiN/NiFe]5 Multilayers. C. Sun1, Y. Tao1, L. Zhu1, Y. Jiao1, X. Hu1, Y. Hui1, F. Jin1 and K. Dong1 1. China University of Geosciences, Wuhan, China

IQ-05. Electric Field Modulation of Interfacial Magnetic Anisotropy in Magnetron-Sputtered PuCo/MgO Ultra-Thin Structure With Chemically Tailored Top Co Interface. R. One1,2, S. Mican1, A. Mesaros2, M. Gabor2, T. Petrisor Jr2, M. Joldos2, L.D. Buda-Prajbeanu1 and C. Tiusan1,2 1. University of Novi Sad, Faculty of Physics, Department of Solid State Physics, Novi Sad, Serbia; 2. Universitaet Babes-Bolyai, Facolta de Fizica, Cluj-Napoca, Romania; 3. SPINtronique et Technologie des Composants, Grenoble, France

IQ-06. Origin of the Large Voltage-Controlled Magnetic Anisotropy in Cr/Fe/MgO Junction With an Ultrathin Fe Layer: First-Principles Investigation. W. Chen1, L. Jiang1, Z. Yan1, Y. Zhu1, C. Wan1 and X. Han1 1. Institute of Physics, University of Chinese Academy of Sciences, Chinese Academy of Sciences, Beijing, China


IQ-08. Magnetic Tunnel Junctions Based on Photoswitchable Self Assembled Monolayers. L. Jerro1, B. Quinard1, S. Delprat1, F. Godel1, S. Collin1, A. Sander1, A. Vecchiola1, K. Bouzehouane1, R. Mattana1, P. Seneor1 and F. Petroff1 1. Unité Mixte de Physique CNRS-Thales, Université Paris Saclay, 91767 Palaiseau, France, Palaiseau, France

IQ-09. Atomistic Simulations for TAMR Applications. B.W. Wilson1, J.N. Scott1, W. Hendren1 and R. Bowman1 1. School of Mathematics and Physics, Queen’s University Belfast, Belfast, United Kingdom
IQ-10. Direct Observation of Spin Polarization in Amorphous CoFeB Thin Film.  
Q. Liu1, X. Lu1, C. Fu2, Y. Yan1, Q. Gao1, H. Li3, Y. Nie1, J. Wu4, L. He1, R. Zhang1 and Y. Xu1  
1. Nanjing University, Nanjing, China; 2. Shandong University, Jinan, China; 3. University of York, York, United Kingdom

ON-DEMAND SESSIONS

Session IR

THIN FILMS AND INTERFACE EFFECTS  
(Poster Session)

Yu Shiratsuchi, Co-Chair
Osaka University, Osaka, Japan

Maciej Dabrowski, Co-Chair
University of Exeter, Exeter, United Kingdom

IR-01. Annealing Temperature and Thickness Dependencies of Perpendicular Magnetic Anisotropy and Dzyaloshinskii-Moriya Interaction of Pt/Co/MgO Thin Film.  
D. Ourdani1, Y. Roussigné1, S.M. Cherif1, M. Gabor2 and M. Belmeguenai1  
1. Université Sorbonne Paris Nord, Villetaneuse, France; 2. Universitatea Tehnica din Cluj-Napoca, Cluj-Napoca, Romania

IR-02. Interfacial Dzyaloshinskii Moriya Interaction and Perpendicular Magnetic Anisotropy in CoFeB/PtOx Based Systems.  
I. Benguetti1,2, Y. Roussigné1, S. Chérif1, L. Chahed2, F. Kail1, S. Auffret3, C. Baraduc3, H. Béa3 and M. Belmeguenai1  
1. Université Sorbonne Paris Nord, LSDP CNRS UPR 3407, Villetaneuse, France; 2. Université Oran1, laboratoire de physique des couches minces et matériaux pour l’électronique, Oran, Algeria; 3. Université Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG, SPINTEC, Grenoble, France

IR-03. Effect of Oxidation of Top Interface on Magnetic Parameters of Epitaxial Films With Dzyaloshinskii-Moriya Interaction.  
G.S. Suslin1, V. Shatilov1 and A. Kozlov1  
1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation

IR-04. Ultrathin CoFe2O4 Films Grown by Molecular Beam Epitaxy on Pt(111).  
G. Delgado Soria1, K. Freindl2, J. Prieto1, A. Quesada1, J. De La Figuera1, N. Spiridis2, J. Korecki2,4 and J. Marco1  
1. Instituto Química Física Rocasolano, CSIC, Madrid, Spain; 2. Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Krakow, Poland; 3. Instituto de Cerámica y Vidrio, Madrid, Spain; 4. AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Krakow, Poland

IR-05. Superconducting Properties of Epitaxial Films of Superconducting NbN and Highly Spin Polarized Co2FeSi Under High Magnetic Fields.  
I. Shigeta1, T. Kubota2,3, S. Kimura2, S. Awaji2, K. Takanashi2 and M. Hiroi1  
1. Department of Physics and Astronomy, Kagoshima University, Kagoshima, Japan; 2. Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan
IR-06. Observation of Antiferromagnetic Coupling Between Ferrimagnetic Garnet Thin Films. J. Liang1, X. Zhao1, S. Ng1, H. Wong1, Y. Liu2, C. Mak2 and C. Leung1. 1. Applied Physics, The Hong Kong Polytechnic University, Hong Kong, China; 2. College of Electronic Information and Mechatronic Engineering, Zhejiang University, Zhejiang, China

IR-07. Modulated in-Plane Uniaxial Magnetic Anisotropy and Permeability Spectrum of NiFe Films by Sapphire Substrates With Periodical Ripples. X. Xu1, Y. Han1, L. Jin1, T. Wen1, Y. Liao1, X. Tang1, H. Zhang1 and Z. Zhong1. 1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China

IR-08. Withdrawn

IR-09. Influence of ion-Irradiation and Annealing on Magnetic Properties of FeCo/NiO Exchange Biased Thin Film. R. Gupta1, S. K1, F. Singh2, V. Reddy2 and A. Gupta1. 1. School of Instrumentation, Devi Ahilya University, Indore, India; 2. Inter-University Accelerator Centre, New Delhi, India; 3. University Grants Commission Department of Atomic Energy Consortium for Scientific Research, Indore, India; 4. Center For Spintronics, Amity University, Noida, India

IR-10. Estimating the Anisotropy Constant in an Antiferromagnet Through Exchange Bias in Polycrystalline Ni-Mn/Fe-Ni Films. M. Moskal1, E. Kudyukov1, A. Gorkovenko1, V. Lepalovskij1 and V. Vas’kovskiy1. 1. Department of Magnetism and Magnetic Materials, Ural Federal University, Ekaterinburg, Russian Federation; 2. Mikheev Institute of Metal Physics, Ekaterinburg, Russian Federation

IR-11. Spin Reorientation Transition and Exchange Bias in Hard/Soft Tb-Co/FeNi Films. A. Svalov1, V. Lepalovskij1, A. Gorkovenko1, I. Makarochkin1, E. Stepanova1, A. Larrañaga2, G.V. Kurlyandskaya3,4 and V. Vas’kovskiy1. 1. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation; 2. Servicios Generales de Investigación, Universidad del País Vasco (UPV/EHU), Leioa, Spain; 3. Departamento de Electricidad y Electrónica, Universidad del País Vasco (UPV/EHU), Bilbao, Spain; 4. Institute of Metal Physics, Ural Branch of Russian Academy of Sciences, Ekaterinburg, Russian Federation

IR-12. Angular Deviation of the Exchange Bias in Bilayer CoFe/IrMn Under Rotating Magnetic Field. N. Strelkov1, A. Timopheev1, C. Ducruet1 and J.R. Childress1. 1. Isere, Crocus Technology Grenoble, Grenoble, France

IR-13. Severe Plastically Deformed, Supersaturated FeCr Alloys – a Candidate Material for Exchange Bias and Enhanced Magnetostriction. L. Weissitsch1, S. Wurster2, M. Stücker1, A. Paulischin1, H. Krenn3, R. Pippan1 and A. Bachmaier1. 1. Erich Schmid Institute of Materials Science, Austrian Academy of Science, Leoben, Austria; 2. Institute of Physics, University of Graz, Graz, Austria
IR-14. Influence of Extrinsic Factors on FMR Linewidth in Systems With Exchange Bias. N.G. Chechenin1, I.O. Dzhun1, G.V. Babaytsev1, M.G. Kozin1, A.V. Makunin1 and I.L. Romashkina1. Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Moscow, Russian Federation

IR-15. Design of a Spin Filter Device Based on Graphene Free-Standing Membranes. L. Nessi1, C. Rinaldi1, R. Bertacco1 and M. Cantoni1. Politecnico di Milano, Milano, Italy

IR-16. Tuning Work Function in Graphene by Thermally Assisted Metal Intercalation. J. Arnaud1, A. Gudin Holgado1, A. Guedeja-Marron Gil1-3, J.M. Diez1-2, A. Anadon1, R. Guerrero1, M. Varela1, J. Camarero1-3, R. Miranda1-3 and P. Perma1. IMDEA Nanosciencia, Madrid, Spain; 2. Departamento de Fisica de la Materia Condensada, Instituto Nicolas Cabrera, and Condensed Matter Physics Center (IFIMAC), Universidad Autonoma de Madrid, Madrid, Spain; 3. Departamento de Fisica de Materiales & Instituto pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain


IR-18. Study of the Schottky Contacts of Ultrathin Fe3O4 Films on GaAs Substrates. J. Zhou1, Z. Zhang1, Y. Yan1, X. Lu1 and Y. Xu1-3. School of Electronic Science and Engineering, Nanjing University, Nanjing, China; 2. York-Nanjing Joint Center in Spintronics, Department of Electronic Engineering, University of York, York, United Kingdom

ON-DEMAND SESSIONS

Session IS
MAGNETIC FIELD SENSORS II (Poster Session)
Pavel Ripka, Co-Chair
Ceske vysoke uceni technicke v Praze, Prague, Czechia
Dirk Meyners, Co-Chair
University of Kiel, Kiel, Germany

IS-01. A Wide-Bandwidth Impedance Measurement Technique With Small Perturbation Injection Based on Magnetic Sensing. J. Liu1, H. Liu1, C. Lee1 and P. Pong1. Electrical and Electronic Engineering, University of Hong Kong, Hong Kong; 2. Department of Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, NJ, United States

IS-02. Semi-Analytical Modeling of High Frequency Eddy Current Sensor in Ferromagnetic Steel With DC Bias. D. Um1, H. Nam1, M. Kim1, J. Jo1, D. Kim2, H. Yoo3 and G. Park1. Pusan National University, Kumuong-ku, The Republic of Korea; 2. Korea Gas Corp Research and Development Division, Incheon, The Republic of Korea
IS-03. RTD Fluxgate Sensors Based on Current Induced Magnetization Reversal in Twisted Glass-Coated Microwires. S. Corodeanu1, C. Hlenschi1,2, A. Damian1, H. Chiriac1, N. Lupu1 and T.A. Ovari1. 1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Alexandru Ioan Cuza University, Faculty of Physics, Iasi, Romania

IS-04. High-Bandwidth Current Sensing Technique Based on Magnetic-Field Sensing Using a Wire Loop and a Differential Amplifier Calibration Circuit. W.C. Miao1, F. Wang1, Q. Xu2 and P.W. Pong1. 1. School of Mechatronic Engineering and Automation, Shanghai University, Shanghai, China; 2. Electrical and Electronic Engineering, University of Hong Kong, Hong Kong; 3. Department of Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, NJ, United States

IS-05. Ultra-Lower Anisotropy Magnetic Field Sensor in Ferrite/Piezoelectric Toroidal Magnetoelectric Composites. J. Zhang1, G. Bingfeng1, J. Liu1, Q. Zhang2, H. Zhao1, Z. Wang1 and K. Li1. 1. College of Electrical and Information Engineering, Zhengzhou University of Light Industry, Zhengzhou, China


IS-07. Magnetic Target Motion Monitoring Based on Weighted Route Fitting. J. Qiu1 and D. Xie1. 1. College of Optoelectronic Engineering, Chongqing University, Chongqing, China

IS-08. High-Stability Magnetic Sensors in Permalloy/Piezoelectric Magnetoelectric Heterostructure Using Inappreciable Hysteresis. J. Zhang1, J. Liu1, G. Bingfeng1, Z. Wang1, K. Li1, H. Zhao1 and Q. Zhang1. 1. College of Electrical and Information Engineering, Zhengzhou University of Light Industry, Zhengzhou, China

IS-09. Simulation of Wave Mode of Flexible SAW Magnetic Sensor Based on ZnO/FeGa/PI Structure. J. Qiu1 and J. Du1. 1. Chongqing University College of Optoelectronic Engineering, Chongqing, China

IS-10. Optimization of Equivalent Noise in the DC Magnetic Field Sensor Based on Magnetoelectric Effect. J. Luo1, Y. Qiu1, H. Yang1, G. Yu1, M. Zhou1 and H. Zhou1. 1. Key Laboratory of Electromagnetic Wave Information Technology and Metrology of Zhejiang Province, China Jiliang University, Hangzhou, China

IS-11. A Sensitive, 2-Axis Magnetic Sensor Based on Anisotropic Magnetoresistance Effect. Q. Jiang1 and Y. Jiang1. 1. Jiangnan University, Wuxi, China

IS-12. Heterogonous Integrated Displacement Sensor With Grooved Ferrite. M.G. Kisic1, A. Stefanov1, M. Lukovic2, O. Aleksic2, M. Damnjanovic1 and L. Zivanov1. 1. Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia; 2. The Institute for Multidisciplinary Research, Belgrade, Serbia

146 Monday
H. Nam1, D. Um1, H. Yoo2, D. Kim2, C. Heo1, M. Kim1, J. Jo1 and G. Park1  
1. Pusan National University, Kumjeong-ku, The Republic of Korea; 2. Korea Gas Corp Research and Development Division, Incheon, The Republic of Korea

H. Huang1, S. Liao1, Y. Yang2, A. Sokolov3, Y. Liu2,3, X. Yin4 and S. Liao1,2,3  
1. Institute of Electro-Optical Engineering, National Taiwan Normal University, Taipei, Taiwan; 2. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States; 3. Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln, Lincoln, NE, United States; 4. Western Digital Corporation, Fremont, CA, United States

T. Yoshinaga1, K. Murai2, Y. Gotoh1, T. Horino1 and Y. Misaka1  
1. Mechanical and Energy Systems Engineering, Oita University, Oita, Japan; 2. Department of Innovative Engineering, Oita University, Oita, Japan; 3. Research and Development Headquarters, Koshuha Netsuren Kabushiki Kaisha, Hiratsuka-shi, Japan

L. Liu1, Y. Hui1, H. Jiang1, K. Wang1, K. Dong1, W. Mo1, J. Song1 and F. Jin1  
1. China University of Geosciences School of Automation, Wuhan, China

ON-DEMAND SESSIONS

Session IT  
NON-DESTRUCTIVE EVALUATION & OTHER SENSORS II  
(Poster Session)  
Nicholas Jones, Chair  
Naval Surface Warfare Center, Carderock Division, Bethesda, MD, United States

IT-01. High Spatial Resolution Flaw Detector Based on the GMR Eddy-Current Probe.  
H. Nguyen1, J. Jeng1, V. Doan1, C. Dinh1, D. Dao1 and T. Pham1  
1. Department of Mechanical Engineering, National Kaohsiung University of Science and Technology, Kaohsiung City 807618, Taiwan

IT-02. Inspection Device Using MFL Sensors for Buried Pipe Inspection to Find all Cracks Regardless of Direction.  
C. Heo1 and G. Park1  
1. Pusan National University, Kumjeong-ku, The Republic of Korea

M. h. Mohd Noor Sam1, J. Zhenhu1, M. Oogane1 and Y. Ando1  
1. Applied Physics, Tohoku University, Sendai, Japan

Monday  147
IT-04. An Electromagnetic non-Destructive Method for Crack Detection Based on Magnetoelectric Sensors. C. Leung¹ and K. Wu¹ 1. Harbin Institute of Technology Shenzhen, Shenzhen, China

IT-05. A Study on the Estimation of the Shapes and Distance of External Metal Around Underground Pipeline Using Magnetic Flux Leakage Sensors. C. Heo¹, H. Jeong¹ and G. Park¹ 1. Pusan National University, Busan, The Republic of Korea

IT-06. Multimodal Magnetooptic Sensing of Magnetic Field, Electric Current and Temperature. F. Klingbeil¹, S. Stölting¹ and J. McCord¹ 1. Institute for Materials Science, Kiel University, Kiel, Germany


IT-08. Modelling Magnetostrictive Materials for Structural Health Monitoring of Carbon Fibre Composite. N. Ahmed¹, R. Deffley¹,² and N. Morley¹ 1. Materials Science and Engineering, The University of Sheffield Faculty of Engineering, Sheffield, United Kingdom; 2. Royce Translational Centre, The Henry Royce Institute, Sheffield, United Kingdom

IT-09. Rogowski Coil With Ferromagnetic Core. V. Grim¹, P. Ripka¹, M. Mirzaei¹ and K. Draxler² 1. Department of Measurement, Ceske vysske uceni technicke v Praze Fakulta elektrotechnicka, Praha, Czechia; 2. Department of electromagnetic quantities, Cesky metrologicky institut, Praha, Czechia

ON-DEMAND SESSIONS

Session JA

AMORPHOUS AND NANOCRYSTALLINE SOFT MAGNETS AND APPLICATIONS

Rastislav Varga, Chair
Univerzita Pavla Jozefa Safarika v Kosiciach, Kosice, Slovakia

JA-01. Development of High Saturation Induction Fe-Ni Based Metal Amorphous Nanocomposite by Optimization of Glass Forming Ability. Y. Krimer¹, A. Barberis¹ and M. McHenry¹ 1. Materials science, Carnegie Mellon University, Carnegie Mellon University, Pittsburgh, PA, US, academic, Pittsburgh, PA, United States

JA-02. Development of an (Fe, Sn)-Based Nanocrystalline Soft Magnetic Alloy. P. Wang¹ and M. Willard¹ 1. Material Science and Engineering, Case Western Reserve University, Cleveland, OH, United States
JA-03. Reducing the Core Losses of Fe-Si-B Amorphous Ribbons by High Cooling Rate Planar Flow Casting. D. Li and Z. Lu
1. School of Electrical Engineering, Beijing Jiaotong University, Beijing, China

JA-04. Laser Processing of Soft Magnetic Metal Amorphous Nanocomposites. A. Talaat1, D.W. Greve2,3, Y. Liu1
K. Byerly4, M. McHenry4, J. Wiezorek1 and P. Ohodnicki1,5
1. Mechanical Engineering & Materials Science, University of Pittsburgh, Pittsburgh, PA, United States; 2. DWGreve Consulting, Sedona, AZ, United States; 3. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 4. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 5. Electrical and Computer Engineering, University of Pittsburgh, Pittsburgh, PA, United States

1. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore; 2. School of physical and mathematical sciences, Nanyang Technological University, Singapore, Singapore

JA-06. Soft Magnetic Properties of Severely Drawn Pearlitie-Ferritic Wires With Nanocrystalline Microstructure. S. Wurster1, M. Stückler1, L. Weissitsch1, H. Krenn2, A. Hohenwarter3, R. Pippan1 and A. Bachmaier1
1. Erich Schmid Institut fur Materialwissenschaft, Leoben, Austria; 2. Institute of Physics, Karl Franzens Universitat Naturwissenschaftliche Fakultat, Graz, Austria; 3. Department of Materials Physics, Montanuniversitat Leoben, Leoben, Austria

JA-07. Detection of Diazinon Organophosphates Using Magnetoelastic Sensor. S. Atalay1, O. Inan1, B. Ates2, S. Baliçoglu2, S. Kolak2, M. Simsek2, V. Kolat1, S. Koytepe2 and T. İzgi1
1. Physics, İnönü Üniversitesi, Malatya, Turkey; 2. Chemistry, İnönü Üniversitesi, Malatya, Turkey

JA-08. Magnetic Substrate Coupled Broadband and Miniaturized Electromagnetic Interference Shielding Structure Using Deep Neural Network. V. Chaudhary3 and R. Panwar1
1. PDPM Indian Institute of Information Technology Design and Manufacturing Jabalpur, Jabalpur, India

JA-09. Withdrawn

JA-10. Fe-SiC Composite Constituted Multilayer Gradient Perforated Microwave Absorbing Structure for Stealth Applications. R. Yadav1 and R. Panwar1
1. PDPM Indian Institute of Information Technology Design and Manufacturing Jabalpur, Jabalpur, India
JA-11. Experimental Investigation and Comparison of Magnetic Properties at High Frequency Between Non-Annealed and Annealed 1 µm-Thick Steels. G. Nguyen1,2, J. Tanase1, K. Nambu1, K. Fujisaki1 and E. Tsuchida1. 1. Toyota Technological Institute, Nagoya, Japan; 2. Nagoya University, Nagoya, Japan; 3. Maruyoshi Kogyo Co., Ltd., Kakamigahara, Japan

JA-12. Fine Tuning of the Magnetic Anisotropy Results in Temperature Independent Ferromagnetic Resonance Frequency for Bi-YIG Thin Films Grown by Pulsed Laser Deposition. D. Gouéré1, H. Merbouche1, C. Carrétéro1, J. Ben Youssef1, E. Jacquet1, R. Lebrun1, P. Bortolotti1, V. Cros1 and A. Anane1. 1. Unité Mixte de Physique CNRS, Thales, Université Paris Saclay, Palaiseau, France; 2. LabSTICC-UMR 6285/ CNRS, Université de Bretagne Occidentale, Brest, France

JA-13. Microwave Synthesis of Magnetic Hollow Nanosystem and Shape Anisotropy Contribution on Enhancement of the Heating Efficiency. G. Niraula1, J.A. Coaquira2, G. Zoppellaro3, D. Muraca4 and S.K. Sharma1,5. 1. Physics, Universidade Federal do Maranhao, Sao Luis, Brazil; 2. Physics, Universidade do Brasil, Brasil; 3. Regional Centre of Advanced Technologies and Materials, Faculty of Science, Univerzita Palackeho v Olomouci Prirodovedecka fakulta, Olomouc, Czechia; 4. Physics, Universidade Estadual de Campinas, Campinas, Brazil; 5. Physics, Central University of Punjab, Bathinda, India

ON-DEMAND SESSIONS

Session JB
CRYSTALLINE SOFT MAGNETS
Paul Ohodnicki, Chair
University of Pittsburgh, Allison Park, PA, United States

JB-01. Flexible Ferromagnetic and Magnetoelectric Thin Films With Excellent Tunability. (Invited) Z. Zhou1, Y. Zhao1, G. Dong1 and M. Liu1. 1. Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education, School of Electronic and Information Engineering, State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University, Xi’an, China

JB-02. High-Throughput Studies of Magnetic High Entropy Alloys. R. Rowan-Robinson1, Z. Leong1 and N. Morley1. 1. Materials Science and Engineering, The University of Sheffield, Sheffield, United Kingdom

JB-03. Accelerated Development of Soft Magnetic Alloys. R. Ramanujan1, V. Chaudhary1, S.P. Padhy1, L. Tan1 and Z. Tsakadze1. 1. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore

JB-04. Compositionally Graded Fe/Co/Ni/NiFe/FeCoV Soft Magnetic Materials. V. Chaudhary1, Z. Tsakadze1 and R. Ramanujan1. 1. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore
JB-05. Parametric Semi-Empirical Design of Magnetic Properties in Complex Concentrated Alloys: Curie Temperature and Saturation Magnetisation. Z. Leong1, R. Rowan-Robinson1, A. Quinata-Nedelcos1 and N. Morley1. 1. The University of Sheffield, Sheffield, United Kingdom


JB-07. Data Mining Approach to Development of Iron-Silicon Soft Magnetic Alloys. L. Tan1, V. Chaudhary1, S.P. Padhy1, V. Sharma1, G.J. Conduit2 and R. Ramanujan1. 1. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore; 2. Department of Physics, University of Cambridge, Cambridge, United Kingdom

JB-08. Effect of Cutting Methods on Magnetic Properties of Electrical Steel. H. Wang1, J. Chen1, Y. Jiang1 and D. Wang1. 1. The Key Laboratory of Science and Technology on Vessel Integrated Power System, Naval University of Engineering, Wuhan, China

JB-09. Crystallisation of Optically Thick Films of CoFeB$_{86.4}$B$_{20}$: Evolution of the (Magnet-) Optical and Structural Properties. A. Sharma1, M.A. Hoffmann2, P. Matthes3, O. Hellwig4, C. Kowol1, S.E. Schulz4, D.R. Zahn1,5 and G. Salvan1,5. 1. Institute of Physics, Technische Universitat Chemnitz, Chemnitz, Germany; 2. Center for Microtechnologies, Technische Universitat Chemnitz, Chemnitz, Germany; 3. Fraunhofer Institute for Electronic Nanosystems, Chemnitz, Germany; 4. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 5. Center for Materials, Architecture, and Integration of Nanomembranes (MAIN), Technische Universitat Chemnitz, Chemnitz, Germany

JB-10. The Secondary Recrystallization Texture and Magnetostriiction in Fe-Ga Alloy Ultra-Thin Sheet. Z. He2,1, Y. Sha1, F. Lei1, H. Du1, F. Zhang1, L. Chen2 and L. Zuo1. 1. Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education), Northeastern University, Shenyang, China; 2. School of Materials Science and Engineering, Shenyang University of Technology, Shenyang, China


Monday 151

Iron Loss Modeling of Anisotropic Soft Magnetic Steels in FEM Simulation Environment. L.A. Millan Mirabal1,2, O. Messal1, A. Benabou1, Y. Le Menach1, J. Roger2 and J. Dureux2. 1. Univ. Lille, Arts et Metiers Institute of Technology, Centrale Lille, Inrea Hauts-de-France, ULR 2697 - L2EP, Lille, France; 2. EDF Lab Saclay, Palaiseau, France


High Coercivity in Bulk Pr-Fe-Cu-B Alloys as a Stable Precursor for Permanent Magnets by Additive Manufacturing. L. Schäfer1, K. Skokov1, J. Liu1, F. Maccari1, T. Braun1, S. Rieg1, I. Radulov1, J. Gassmann2, H. Merschroth3, J. Harbig1, M. Weigold4 and O. Gutknecht1. 1. Functional Materials, Technische Universität Darmstadt Fachbereich Material- und Geowissenschaften, Darmstadt, Germany; 2. Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik IWU, Dresden, Germany; 3. Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik IWU, Dresden, Germany; 4. Technical University of Chemnitz, Chemnitz, Germany

Unexpected Coercivity Enhancement > 1 T for Nd-Fe-B Permanent Magnets With 20 wt. % Nd Produced by Laser Powder bed Fusion. F. Bittner1, J. Thielsch1 and W. Drossel1,2. 1. Additive Manufacturing, Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik IWU, Dresden, Germany; 2. Technical University of Chemnitz, Chemnitz, Germany

Batch Fabrication of 50 µm Thick Anisotropic NdFeB Micro-Magnets. F.O. Keller1, R. Haettel1, T. Devillers1 and N. Dempsey1. 1. Institut Néel, UGA-CNRS, Grenoble, France

ON-DEMAND SESSIONS
Session JC
RE-BASED PERMANENT MAGNETS
Hossein Sepehri-Amin, Chair
Busshitsu Sairyo Kenkyu Kiko, Ibaraki, Japan


JC-02. High Coercivity in Bulk Pr-Fe-Cu-B Alloys as a Stable Precursor for Permanent Magnets by Additive Manufacturing. L. Schäfer1, K. Skokov1, J. Liu1, F. Maccari1, T. Braun1, S. Rieg1, I. Radulov1, J. Gassmann2, H. Merschroth3, J. Harbig1, M. Weigold4 and O. Gutknecht1. 1. Functional Materials, Technische Universität Darmstadt Fachbereich Material- und Geowissenschaften, Darmstadt, Germany; 2. Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik IWU, Dresden, Germany; 3. Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik IWU, Dresden, Germany; 4. Technical University of Chemnitz, Chemnitz, Germany

JC-03. Unexpected Coercivity Enhancement > 1 T for Nd-Fe-B Permanent Magnets With 20 wt. % Nd Produced by Laser Powder bed Fusion. F. Bittner1, J. Thielsch1 and W. Drossel1,2. 1. Additive Manufacturing, Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik IWU, Dresden, Germany; 2. Technical University of Chemnitz, Chemnitz, Germany

JC-04. Batch Fabrication of 50 µm Thick Anisotropic NdFeB Micro-Magnets. F.O. Keller1, R. Haettel1, T. Devillers1 and N. Dempsey1. 1. Institut Néel, UGA-CNRS, Grenoble, France

JC-06. Microstructure and Hard Magnetic Properties of Sm$_{1-x}$Zr$_x$(Fe,Co)$_{11.3-y}$Ti$_y$B$_y$ Ingots and Thick Melt-Spun Ribbons. A. Gabay$^1$ and G. Hadjipanayis$^1$ 1. University of Delaware, Newark, DE, United States


JC-08. Magnetic Alignment in Anisotropic Nd-Fe-B Bonded Magnets. X. Liu$^1$, K. Gandha$^1$, P.M. Paranathan$^2$ and C.I. Nlebedim$^1$ 1. Ames Laboratory, Ames, IA, United States; 2. Oak Ridge National Laboratory, Oak Ridge, TN, United States

JC-09. Anisotropic Fractal Dimension of Nd-Fe-B Permanent Magnets Fracture Surface. Q. Sun$^{1,2}$, M. Zhu$^1$ and J. Bai$^2$ 1. Central Iron and Steel Research Institute Group, Beijing, China; 2. School of Materials Science and Engineering, Northeastern University, Shenyang, China

JC-10. Influence of Reducing Agent to Recovery of Nd$_2$Fe$_{14}$B Sludge Waste by Calcium Reduction Diffusion Method. H. Xu$^1$, Q. Lu$^1$, W. Liu$^{1,2}$, X. Yi$^2$ and M. Yue$^{1,2}$ 1. Key Lab of Advanced Functional Materials, Beijing University of Technology, Beijing, China; 2. State Key Laboratory of rare earth permanent magnetic materials, Hefei, China


JC-12. Theoretical Investigation of the Orbital Moment of the Sm Ions in SmFe$_{12}$ With the GGA+U Method. S. Yamashita$^1$, T. Yoshioka$^1$, H. Tsuchiura$^1$ and P. Novák$^2$ 1. Tohoku University, Sendai, Japan; 2. Czech National Academy of Science, Praha, Czechia
JD-01. Correlation Between Atomic Ordering and Magnetic Properties in L1₀ Alloys. (Invited) S. Laureti¹, 1. Institute for Structure of Matter, Consiglio Nazionale delle Ricerche, Roma, Italy

JD-02. High-Throughput and Data-Mining Search for Rare-Earth-Free Permanent Magnets. A. Vishina¹, H.C. Herper¹ and O. Eriksson¹,² 1. Uppsala Universitet, Uppsala, Sweden; 2. School of Science and Technology, Örebro University, Örebro, Sweden

JD-03. Fcc-Co Clusters in L1₀-FePt Matrix as Graded-Interface Magnetic Nanocomposite. C. Paleo¹, V. Dupuis¹, F. Wilhelm², T. Epicier³, N. Dempsey⁴ and D. Le Roy¹ 1. Institut Lumiere Matiere, Villeurbanne, France; 2. ESRF, Grenoble, France; 3. Institut National des Sciences Appliquees de Lyon, Villeurbanne, France; 4. Institut NEEL, Grenoble, France

JD-04. Tuning Magnetic Anisotropy of MnBi Permanent Magnet With Sn*. M. Choi¹, Y. Hong¹, H. Won¹, T. Lee² and J. Lee² 1. Electrical and Computer Engineering, The University of Alabama, Tuscaloosa, AL, United States; 2. Institute of Fundamental and Advanced Technology (IFAT), Hyundai Motor Company, Uiiwang-si, The Republic of Korea

JD-05. Effects of Composition on the Ordered Phase Formation in Mn-Al and Mn-Ge Alloy Thin Films Grown on Cr(001) Single-Crystal Underlayers. S. Noro¹, K. Nakano¹, M. Ohtake¹, M. Futamoto¹, T. Kawai¹, F. Kirino³ and N. Inaba¹ 1. Faculty of Engineering, Yokohama National University, Yokohama, Japan; 2. Faculty of Fine Arts, Tokyo University of the Arts, Tokyo, Japan; 3. Faculty of Engineering, Yamagata University, Yonezawa, Japan

JD-06. The Dependence of the Intrinsic Magnetic Properties of Mn₃AlC on its Chemical Composition. F. Jürries¹,², K. Nielsch¹,² and T. Woodcock¹ 1. Leibniz IFW Dresden, Dresden, Germany; 2. Technische Universität Dresden, Dresden, Germany

JD-07. Tuning Spin and Magnetocrystalline Anisotropy of L1₀-Ordered MnAl With Transition Metal Elements (TM = Mn, Fe, Co, Ni)*. M. Choi¹, Y. Hong¹, H. Won¹, C. Yeo², S. Kim³, H. Lee¹ and W. Lee¹ 1. Electrical and Computer Engineering and Materials Science Ph.D. Program, The University of Alabama, Tuscaloosa, AL, United States; 2. Mechanical Engineering, Texas Tech University, Lubbock, TX, United States; 3. Materials Science & Engineering, Yonsei University, Seoul, The Republic of Korea
MnAlC Permanent Magnets Obtained Directly From ε-Phase Gas-Atomized and Milled Powder by Hot-Pressing.

C. Muñoz Rodriguez1, E.M. Palmero1, J. Rial1, L. Feng2, T. Mix2, B. Skårman3, H. Vidarsson3, P. Larsson3, T. Woodcock2 and A. Bollero1

1. Division of Permanent Magnets and Applications, Fundacion IMDEA Nanociencia, Madrid, Spain; 2. Leibniz-Institut fur Festkorper- und Werkstofforschung Dresden eV Institut fur Metallmaterialien, Dresden, Germany; 3. Hoganas AB, Hoganas, Sweden

Additive Manufacturing of Rare Earth-Free and Hybrid Permanent Magnets: From Composites Synthesized by Solution Casting to Magnetic Filament and 3D-Printing of Magnets.

E.M. Palmero1, D. Casaleiz1, J. de Vicente1 and A. Bollero1

1. Group of Permanent Magnets and Applications, Fundacion IMDEA Nanociencia, Madrid, Spain

Morphology, Structure and Magnetic Coupling Relationship in Hard-Soft SrFe12O19-CoFe2O4 Nanostructures.

P. Maltoni1, T. Sarkar1, G. Barucca2, G. Varvaro3, F. Locardi4, D. Peddis5,6 and R. Mathieu6

1. of Materials Science and Engineering, Uppsala Universitet, Uppsala, Sweden; 2. Universita Politecnica delle Marche, Ancona, Italy; 3. Istituto di Struttura della Materia Consiglio Nazionale delle Ricerche Sede secondaria di Montelibretti, Montelibretti, Italy; 4. DCCI, Universita degli Studi di Genova, Genova, Italy

Metal Nanowire–Strontium Ferrite Composites for Free Rare-Earth Magnets.

J. Guzmán Mínguez1, S. Ruiz Gómez1, L. Vicente Arche1, C. Granados Miralles1, C. Fernández González1, F. Mompeán1, M. Garcia Hernandez1, S. Erokhin1, D. Berkov1, D. Mishra6,7 and V. Franco1

1. Instituto de Ceramica y Vidrio - CSIC, Madrid, Spain; 2. Departamento de Física de Materiales, Universidad Complutense de Madrid, Madrid, Spain; 3. Instituto Madrileño de Estudios Avanzados, Madrid, Spain; 4. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 5. General Numerics Research Lab, Jena, Germany; 6. Department of Physics, Indian Institute of Technology Jodhpur, Jodhpur, India; 7. IMEM - CNR, Parma, Italy

ON-DEMAND SESSIONS

Session JE

MAGNETO-CALORIC MATERIALS AND DEVICES I

Radhika Barua, Chair

Virginia Commonwealth University, Richmond, VA, United States

Overcoming the Limitations of Magnetocaloric Rare-Earth-Free High-Entropy Alloys. (Invited) J. Law1, Á. Diaz-García1, L.M. Moreno-Ramírez2 and V. Franco1

1. Department of Condensed Matter Physics, ICMS-CSIC, Universidad de Sevilla, Sevilla, Spain

JE-03. Machine Learning Strategies for Screening Mn-T-X (T=Co, Fe, Ni; X=Si, Ge, Sn) Multicaloric Materials. T. Hartnett, P. Balachandran, R. Barua and V. Sharma. Materials Science Engineering, University of Virginia, Charlottesville, VA, United States. Mechanical Engineering, University of Virginia, Charlottesville, VA, United States. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States.


JE-05. Temperature-Induced Successive Martensitic and Inter-Martensitic Phase Transformations of Ni₂.₁₅Mn₀.₈₅Ga Heusler Alloy. A.S. Madiligama, P. Ari-Gur, V. Shavrov, V. Koledov, Y. Ge and J. George. Science/Physics, Penn State DuBois, DuBois, PA, United States. Department of Mechanical and Aerospace Engineering, Western Michigan University, Kalamazoo, MI, United States. 3. X-ray Science Division, Argonne National Laboratory Advanced Photon Source, Lemont, IL, United States. 4. Laboratory of Magnetic Phenomena in Microelectronics, Kotel’nikov Institute of Radio-engineering and Electronics of RAS, Moscow, Russian Federation. 5. Aalto-yliopisto, Aalto, Finland. 6. Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States.

JE-06. Chemical Stability of Magnetocaloric La(FexCoySi1-x-y)₁₃ Particles. V. Sharma, K. Javed, S. Gupta, A. Biswas, V. Pecharsky, R. Barua and R.L. Hadimani. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States. 2. Division of Materials Science and Engineering, Ames Laboratory, Ames, IA, United States. 3. Department of Materials Science and Engineering, Iowa State University, Ames, IA, United States. 4. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States.

JE-08. Deconvolution of First and Second Order Phase Transitions Using the Scaling Laws of the Magnetocaloric Effect.
A. Diaz-Garcia\textsuperscript{1}, J. Law\textsuperscript{1}, A. Giri\textsuperscript{2} and V. Franco\textsuperscript{1} \textsuperscript{1}. Condensed Matter Physics, Universidad de Sevilla, Sevilla, Spain; 2. US CCDC Army Research Laboratory, Aberdeen Proving Ground, MD, United States

V. Franco\textsuperscript{1}, Á. Diaz-Garcia\textsuperscript{1}, L.M. Moreno-Ramirez\textsuperscript{1}, J. Law\textsuperscript{1}, S. Fabbrici\textsuperscript{2} and F. Albertini\textsuperscript{2} \textsuperscript{1}. Universidad de Sevilla, Sevilla, Spain; 2. Istituto dei Materiali per l’Elettronica e il Magnetismo, Consiglio Nazionale delle Ricerche, Parma, Italy

A. Ahmad\textsuperscript{1}, S. Mitra\textsuperscript{1}, S.K. Srivastava\textsuperscript{1} and A.K. Das\textsuperscript{1} \textsuperscript{1}. Physics, Indian Institute of Technology Kharagpur, Kharagpur, India

JE-11. In-Silico Thermodynamic Description of Heusler Compounds Applied to Magnetocalorics by Monte Carlo Simulations Starting From ab-Initio.
C. Amorim\textsuperscript{1}, J.N. Gonçalves\textsuperscript{1}, V.S. Amaral\textsuperscript{1}, J. Law\textsuperscript{1}, S. Fabbrici\textsuperscript{2} and F. Albertini\textsuperscript{2} \textsuperscript{1}. Universidad de Aveiro CICECO, Aveiro, Portugal

ON-DEMAND SESSIONS
Session JF
MAGNETO-ELASTIC AND MAGNETO-OPTIC MATERIALS AND DEVICES
Nicola Morley, Co-Chair
University of Sheffield, Sheffield, United Kingdom
Lei Bi, Co-Chair
University of Electronic Science and Technology of China, Chengdu, China

JF-01. All-Dielectric Magnetophotonics. \textit{(Invited)} V.I. Belotelov\textsuperscript{1} \textsuperscript{1}. Lomonosov Moscow State University, Moscow, Russian Federation

JF-02. Magneto-Optical Effect in bcc Fe: Microscopic Origin and Topological Aspects. O. Stejskal\textsuperscript{1}, M. Veis\textsuperscript{1} and J. Hamrle\textsuperscript{1} \textsuperscript{1}. University Karlova Mathematiko-fyzikalni fakulta, Praha, Czechia
JF-03. Magnetic Anisotropy Switching Induced by Shape Memory Effect in NiTi/Ni Bilayer. A. Kyianytsia1, M. Poncot1, E. Gaudry1, P. Boulet1, S. Migot1, J. Ghanbaja1, B. Kierren1 and T. Hauet1 1. Institut Jean Lamour, Institut Jean Lamour, Nancy, France.


JF-06. Validation of a Reduced Order Magnetoelastic Beam Model. M.E. Goforth1, J.P. Domann1 and A.N. Imhof1 1. Biomedical Engineering and Mechanics, Virginia Polytechnic Institute and State University, Blacksburg, VA, United States.

JF-07. Design and Analysis of a Fuel Injector Based on a Magnetostrictive Actuator. L. Allocca1, D. Davino2, A. Montanaro1 and C. Visone1 1. Istituto di Scienze e Tecnologie per l’Energia e la Mobilità Sostenibili (STEMS) - CNR, Napoli, Italy; 2. Dipartimento di Ingegneria, Università degli Studi del Sannio, Benevento, Italy; 3. DIETI, Universita degli Studi di Napoli Federico II, Napoli, Italy.

JF-08. Approximation Methods for Hybrid Constitutive Model of Magnetostriction. A.N. Imhof1, J.P. Domann1 and M.E. Goforth1 1. Biomedical Engineering and Mechanics, Virginia Polytechnic Institute and State University, Blacksburg, VA, United States.


JF-11. Phase Transformation and Magnetostriction in Fe_{100-x}Ga_{x} Bulk Alloys. M. Coisson1, K.D. N’Dri2, L. Diallo3, E.S. Olivetti1, L. Martino1, C.P. Sasso1, F. Celegato1, G. Barrera1, M. Pasquale1, P. Tiberto1, J. Jurasek2, S. Bahamida2 and A. Fnidiki2 1. Advanced Materials and Life Sciences, Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 2. Universite de Lorraine Faculte des Sciences et Technologies, Vandoeuvre-les-Nancy, France; 3. Groupe de Physique des Materiaux, Sainte Etienne du Rouvray, France; 4. Universite M’Hamed Bougara Boumerdes, Boumerdes, Algeria

JF-12. Real Time Monitoring of the Precipitation of Calcium Oxalate by Using Corrosion Resistant Magnetoelastic Resonance Sensors. B. Sisniega Soriano1, A. Sagasti1, J. Gutiérrez1,2 and A. García-Arribas1,2 1. Electricidad y Electrónica, Universidad del Pais Vasco, Bilbao, Spain; 2. Fundacion BCMaterials - Basque Center for Materials Applications and Nanostructures, Leioa, Spain

JF-13. A Calculation of Magneto-Mechanical Sensitivity for Various Compositions of Galfenol. J. Yoo1, N. Jones1, P. Finkel2 and M. Staruch2 1. Naval Surface Warfare Center Carderock Division, West Bethesda, MD, United States; 2. US Naval Research Laboratory, Washington, DC, United States

ON-DEMAND SESSIONS

Session JG

BIO-APPLICATIONS OF MAGNETISM I

Yuko Ichiyanagi, Chair
Yokohama National University, Yokohama, Japan

JG-01. Aggregates and Dipolar Interactions in Nanoparticle Assemblies for Magnetic Hyperthermia. O. Iglesias1,2 1. Condensed Matter Physics, Universitat de Barcelona, Barcelona, Spain; 2. IN2UB, Barcelona, Spain

JG-02. Shimming Design of Magnetic Shield Room Using Ferromagnetic Plates. S. Jin1, A. Kuwahata1, S. Chikaki1, M. Hatano2 and M. Sekino1 1. Department of Electrical Engineering and Information Systems, Graduate School of Engineering, Tokyo University, Tokyo, Japan; 2. Department of Electrical Engineering and Information Systems, Graduate School of Engineering, Tokyo Institute of Technology, Tokyo, Japan

JG-04. Low Frequency Induction Heating of a Ferromagnetic Catheter for the Varicose Veins Treatment: Study of Feasibility. Y. Liu1,2, Z. Xiang1, B. Ducharme2,3, J. Garcia4, B. Newell5 and M. Le1. 1. LGF INSa Lyon, Villeurbanne, France; 2. ELyTMaX UMI 3757, CNRS – Université de Lyon – Tohoku University, International Joint Unit, Tohoku University, Sendai, Japan, Sendai, Japan; 3. Purdue University, West Lafayette, IN, United States

JG-05. Cation Leaching Alters the Properties of Mn Nanoferrites for Biomedical Applications. D. García-Soriano1, N. Lafuente-Gómez1, P. Milán-Roii1, Á. Somoza1,2, C. Navio1, F. Herrane3, L. Gutiérrez3 and G. Salas4. 1. Fundacion IMDEA Nanociencia, Madrid, Spain; 2. Unidad Asociada de Nanobiotecnologia (CNB-CSIC e IMDEA Nanociencia), Madrid, Spain; 3. Instituto de Ciencia Médica, Consejo Superior de Investigaciones Científicas, Madrid, Spain; 4. Universidad de Zaragoza Instituto de Nanociencia de Aragon, Zaragoza, Spain

JG-06. Vortex Nano-Discs: From Micromagnetic Simulations to Cancer Cells Internalization for Magneto-Mechanically Induced Damage Applications. C. Sousa1, R. Magalhães1, S. Caspani1, S. Moraes1, L. Peixoto1, D. Navas2, C. Redondo3, R. Morales4,5, S. Lima6, C. Nunes6, S. Reis6 and J. Pedro Esteves de Araújo1. 1. IFIMUP and DFA, Faculdade de Ciências da Universidade do Porto, Porto, Portugal; 2. Instituto de Ciencia de Materiales de Madrid, ICMCS-CSIC, Madrid, Spain; 3. Dpto. de Química-Física, Universidad del País Vasco UPV/EHU, Madrid, Spain; 4. Dpto. de Química-Física & BCMaterials, Universidad del País Vasco UPV/EHU, Bilbao, Spain; 5. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain; 6. LAQV, REQUIMTE, Faculty of Pharmacy of Porto University, Porto, Portugal

JG-07. Superparamagnetic and Bioactive Nanoparticles for Bone Cancer Treatment. F. Vergnaud1, C. Vichery1 and J. Nedelec1. 1. SIGMA Clermont Grande ecole d‘ingenieurs, Aubiere, France

JG-08. Unidirectional Transport of Superparamagnetic Beads and Biological Cells Along an Oval Shaped Magnetic Element Path. F. Block1, F. Klingbeil1, U. Sajjad1, D. Seidler1, C. Arndt2,3, S. Sindt2,3, C. Selhuber-Unkel2,3 and J. McCord4. 1. Nanoscale Magnetic Materials - Magnetic Domains, Institute for Materials Science, Kiel University, Kiel, Germany; 2. Biocompatible Nanomaterials, Institute for Materials Science, Kiel University, Kiel, Germany; 3. Institute for Molecular Systems Engineering (IMSE), Heidelberg University, Heidelberg, Germany

JG-09. In-Vitro Manipulation and Bio-Imaging of Cells Using Magnetic Nanodiamond. R. Selvam1, E. Perevedentsseva1,2, A. Karmenyan3 and C. Cheng1. 1. Department of physics, National Dong Hwa University, Shoufeng, Taiwan; 2. P.N. Lebedev Physics Institute of Rus. Acad. Sci, Moscow, Russian Federation


JG-12. A Novel Magnetic Respiratory Sensor for Real-Time Tracking of Coronavirus Progress. (Invited) K. Hwang1, V. Jimenez1, B. Muchharla1 and M. Phan1 1. Department of Physics, University of South Florida College of Arts & Sciences, Tampa, FL, United States

ON-DEMAND SESSIONS

Session JH
MAGNETIC PARTICLES, MAGNETIC FLUIDS, AND SEPARATION
Jungjin Park, Co-Chair
University of Maryland at College Park, College park, MD, United States
Oscar Iglesias, Co-Chair
University of Barcelona, Barcelona, Spain

JH-01. High Magnetic Sorting Efficiency in a Microfluidic Device. L. Descamps1, S. Mekkaoui1, J. Howard1, M. Audry1, A. Deman1 and D. Le Roy2 1. Institut des Nanotechnologies de Lyon, Villeurbanne, France; 2. Institut Lumiere Matiere, Villeurbanne, France


JH-03. A Study on the Effects of Graphite Flakes on Torque Transmission of a Magnetorheological Fluid Clutch. M.A. Fernández1 and J. Chang1 1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan

JH-04. A Novel Sealing Method Using Nano-Micron Magnetic Powders and its Leakage Rate Analysis. Z. Li1 and D. Li1 1. State Key Laboratory of Tribology, Beijing, China
JH-05. A Novel Magnetofluidic System to Cool Solar Cells. V.B. Varma1,2, S. Chekkati1,2, M.S. Pattanaik1,2 and R. Ramanujan1,2. 1. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore; 2. Singapore-HUJ Alliance for Research and Enterprise (SHARE), Nanomaterials for Energy and Energy-Water Nexus (NEW), Campus for Research Excellence And Technological Enterprise, Singapore, Singapore

JH-06. Magnetic Manipulation of Hydrogel Droplets in Culture Media for Biological Applications. S. Yuan1, A. Shum2 and P. Pong3,1. 1. Department of Electrical and Electronic Engineering, University of Hong Kong, Hong Kong; 2. Department of Mechanical Engineering, University of Hong Kong, Hong Kong; 3. Department of Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, NJ, United States

JH-07. Crucial Role of the Co Cations on the Destabilization of the Ferrimagnetic Alignment in Co-Ferrite Nanoparticles With Tunable Structural Defects. C. Moya1,2, A. Fraile Rodriguez1, M. Escoda-Torroella1, M. Garcia del Muro1, S.R. Avula3, C. Piamonteze1, X. Batlle1 and A. Labarta1. 1. Física de la Matèria Condensada, Institut de Nanociència i Nanotecnologia (IN2UB), Universitat de Barcelona, Universitat de Barcelona, Barcelona, Catalunya, ES, academic, Barcelona, Spain; 2. Engineering of Molecular Nanosystems, Universite Libre de Bruxelles, Bruxelles, Belgium; 3. Swiss Light Source, Paul Scherrer Institut, Villigen, Switzerland

JH-08. Selective Control of Reagents as a Tuning Knob for Iron Oxide Nanoparticles With Controlled Morphology, Oxidation State and Magnetic Response. M. Escoda-Torroella1,2, C. Moya3, A. Fraile Rodriguez1,2, X. Batlle1,2 and A. Labarta1,2. 1. Física de la Matèria Condensada, Universitat de Barcelona, Barcelona, Spain; 2. Institut de Nanociència i Nanotecnologia, Universitat de Barcelona, Barcelona, Spain; 3. Engineering of Molecular Nanosystems, Universite Libre de Bruxelles, Bruxelles, Belgium

JH-09. Tailored Magnetic Field Sequences for Improved Magnetic Nanoparticle Characterization and Imaging. A. Coene1,2 and J. Leliaert3. 1. Department of Electromechanical, Systems and Metal Engineering, Universiteit Gent, Gent, Belgium; 2. Cancer Research Institute, Universiteit Gent, Gent, Belgium; 3. Department of solid state sciences, Universiteit Gent, Gent, Belgium

JH-10. Time-Dependent AC Magnetometry of Magnetite Nanoparticles in the Monodomain-Multidomain Limit. I. Morales Casero1, P. de la Presa1,2, N. Mille3,4, J. Carrey3,4, P. Morales5,6 and A. Hernando1. 1. Universidad Complutense de Madrid Instituto de Magnetismo Aplicado, Madrid, Spain; 2. Departamento de Materiales, Universidad Complutense de Madrid Facultad de Ciencias Físicas, Madrid, Spain; 3. Laboratoire de Physique et Chimie des Nano-objets, Toulouse, France; 4. INSA Toulouse, Toulouse, France; 5. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 6. Consejo Superior de Investigaciones Científicas, Madrid, Spain
JH-11. Chain Formation of PNIPAM Coated Magnetic Nanoparticles in an External Magnetic Field and the Effect of Temperature. N. Taib1,2, R. Woodward3, K. Iyer4 and T. St. Pierre2 1. Faculty of Applied Sciences, Perak Branch, Tapah Campus, 35400, Universiti Teknologi MARA, Tapah Road, Malaysia; 2. School of Physics, Mathematics, and Computing, The University of Western Australia, Perth, WA, Australia; 3. John Forrest Secondary College, Morley, WA, Australia; 4. School of Molecular Sciences, The University of Western Australia, Perth, WA, Australia

ON-DEMAND SESSIONS

Session JI

NANOPARTICLES AND NANOWIRES

Tomoyuki Ogawa, Chair
Tohoku University, Sendai, Japan


JI-02. Controlled Magnetization by Magnetic Fields in Multisegmented Cylindrical Nanowires. C. Bran1, J. Fernandez-Roldán1,2, E. Saugar1, R. del Real1, A. Asenjo1, A. Fraile Rodríguez1, M. Foerster4, L. Aballe4, O. Chubykalo-Fesenko1 and M. Vázquez1 1. Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), Madrid, Spain; 2. Universidad de Oviedo Departamento de Fisica, Oviedo, Spain; 3. Departament de Física de la Matèria Condensada, Universitat de Barcelona, Barcelona, Spain; 4. ALBA Synchrotron Light Facility, Barcelona, Spain

JI-03. Phase Diagram of Magnetization Reversal Modes in Cylindrical Ni Nanowires. M.P. Proenca1,2, J. Rial1, J. Pedro Estevés de Araújo1 and C. Sousa1 1. Departamento de Fisica e Astronomia, Faculdade de Ciências da Universidade do Porto, IFIMUP - Instituto de Physics for Advanced Materials, Nanotechnology and Photonics of University of Porto, Porto, Portugal; 2. Instituto de Sistemas Optoelectrónicos y Microtecnologia (ISOM), Universidad Politécnica de Madrid, Madrid, Spain


1. University of Cambridge, Cambridge, United Kingdom; 2. Universitat Wien, Wien, Austria; 3. London Centre for Nanotechnology, London, United Kingdom; 4. Unite Mixte de Physique CNRS/Thales, Palaiseau, France; 5. Universidad de Oviedo, Oviedo, Spain; 6. University of Glasgow, Glasgow, United Kingdom

JI-06. Magnetocuring and Magnetorheology of Composites. R. Chaudhary1, V. Chaudhary1, R. Ramanujan1 and T.W. Steele1.

1. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore


1. Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus; 2. National Research Nuclear University MEPhI, Moscow, Russian Federation


1. Institute of Functional Nanosystems, Ulm University, 89081 Ulm, Germany; 2. Institute of Chemical Engineering, Ulm University, 89081 Ulm, Germany


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1. Department of Physics, The University of Texas at Arlington, Arlington, TX, United States


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1. Institut des NanoSciences de Paris, Sorbonne Universite, Paris, France; 2. Centre de Nanosciences et de Nanotechnologies, Universite Paris-Saclay, Saint-Aubin, France


1. University of Minnesota, Minneapolis, MN, United States
ON-DEMAND SESSIONS

Session JP
BIO-APPLICATIONS OF MAGNETISM II
(Poster Session)

Arantxa Fraile Rodríguez, Co-Chair
Universitat de Barcelona, Universitat de Barcelona, Barcelona, Catalunya, ES, academic, Barcelona, Spain
Jonathan Leliaert, Co-Chair
Ghent University, Ghent, Belgium

JP-01. Neural Network Model for Estimation of the Induced Electric Field During Transcranial Magnetic Stimulation. O.F. Afuwape1,2, O.O. Olafasakin2 and D.C. Jiles1
1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. Department of Mechanical Engineering, Iowa State University, Ames, IA, United States

JP-02. Low Temperature Synthesis of Functionalized Magnetic Nanoparticles Engineering for Cancer Theranostics. K. Chinnasamy3 and V. Harris1
1. Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 2. Manheim Township High School, Lancaster, PA, United States

JP-03. Cancer Cells Death Induced by Magneto-Mechanical Actuation of Fe-Cr-Nb-B Magnetic Particles Carried by Stem Cells to the Cancer Cells Area. H. Chiriac1, A. Minuti1,2, C. Stavila3, L. Labusca1, D. Herea1 and N. Lupu1
1. Dept. of Magnetic Materials & Devices, National Institute of R&D for Technical Physics, Iasi, Romania; 2. Faculty of Physics, “Alexandru Ioan Cuza” University, Iasi, Romania

1. Oriental Biomedical Engineering, Sangji University, Wonju, The Republic of Korea

1. IFIMUP, Universidade do Porto Faculdade de Ciencias, Porto, Portugal; 2. LAQV/REQUIMTE, Universidade do Porto Faculdade de Ciencias, Porto, Portugal; 3. CF-UM-UP, Universidade do Minho, Braga, Portugal

JP-06. Possibilities of Registration of Biological Molecules via Magnetic Particles. L.P. Ichkitidze1,2, M. Belodedov2, A. Gerasimenko1,2, D. Telyshev2,1, Y. Rezvantsava1 and S. Selishchev3
1. I.M.Sechenov First Moscow State Medical University, Moscow, Russian Federation; 2. National Research University of Electronic Technology, MIET, Zelenograd, Moscow, Russian Federation; 3. National Research University of Technology (BMSTU), Moscow, Russian Federation
JP-07. PEGylation of Ni1-xZnxFe2O4 Nanoparticles With Heat Dissipation Based on Neél and Brownian Relaxation. K. Kodama1, S. Hamada1, K. Nashimoto1, K. Aoki2 and Y. Ichiyanagi1,2 1. Engineering, Yokohama Kokuritsu University, Yokohama, Japan; 2. Environmental information, Yokohama Kokuritsu University, Yokohama, Japan; 3. Research Center for Thermal and Entropic Science, Osaka University, Suita, Japan

JP-08. Influence of ELF Magnetic Field on Thyroxine-Inducing Forced Metamorphosis of Axolotl (Ambystoma Mexicanum). H. Nakagawa1, S. Fujiiwara2 and T. Tadokoro3 1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Tokyo, Japan; 2. Division of Clinical Research, CPCC, Tokyo, Japan

JP-09. Research on X-Shape Quad Helix Coil for Transcranial Magnetic Stimulation. N. Zhang1, J. Shi1, Y. Zhang1, P. Song1, B. Lai2, T. Zhu1, S. Ning2 and S. Wang1 1. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. School of Electronic Information and Artificial Intelligence, Shaanxi University of Science and Technology, Xi’an, China; 3. Quanzhou Experimental Middle School, Quanzhou, China

JP-10. Transcranial Magnetic Stimulation: the Effect of Age and Other Factors on the Intensity of the Quadruple Butterfly Coil. O.F. Afuwape1,2, J. Runge1 and D.C. Jiles1 1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. Department of Mechanical Engineering, Iowa State University, Ames, IA, United States

JP-11. The Series Study of the CoZnFe2O4Ag in the MRI Contrast. V. Sabie1, C. Constantin1, O. Caltun1 and R. Danila1 1. Universitatea Alexandru Ioan Cuza Facultatea de Fizica, Iasi, Romania; 2. Faculty of Chemistry, Universitatea Alexandru Ioan Cuza, Iasi, Romania

JP-12. The Effect of Silica Shell Thickness on Magnetic and Proton Relaxometric Properties: Fe3O4@MSiO2 Nanoparticles. N. Taib1,2, T. St. Pierre2 and R. Woodward3 1. Faculty of Applied Sciences, Perak Branch, Tapah Campus, 35400, Universiti Teknologi MARA, Tapah Road, Malaysia; 2. School of Physics, Mathematics, and Computing, The University of Western Australia, Perth, WA, Australia; 3. John Forrest Secondary College, Morley, WA, Australia

JP-13. A Simple Localization Method of Magnetic Particles for Hyperthermia Therapy Using Figure-8 Coil. L. Ton That1, R. Hirota1, T. Kitamura1, K. Okita2 and S. Yabukami1,2 1. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 2. Graduate School of Biomedical Engineering, Tohoku University - Aobayama Campus, Sendai, Japan

JP-14. Study on Non-Thermal Intervention of Lung Tumor by Fe3O4@SiO2 Nanoparticles in a Magnetic Field. N. Zhang1,2, Z. Wang1, S. Ning3, S. Wang1, B. Lai4, C. Zhang2, S. Wang1 and H. Qiu1 1. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. Department of Oncology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 3. School of Electronic Information and Artificial Intelligence, Shaanxi University of Science and Technology, Xi’an, China; 4. Quanzhou Experimental Middle School, Quanzhou, China
Optically Powered Diamagnetically Levitated Robots for Biomedical Applications. M. Beauchamp1, S. Yee1, I. O’Carroll1, E. Chapman1 and H. ElBidweihy1. 1. US Naval Academy, Annapolis, MD, United States

ON-DEMAND SESSIONS

Session JQ

BIO-MAGNETISM, MAGNETIC FLUIDS, AND SEPARATION

(Poster Session)

Horia Chiriac, Chair
National Institute of Research and Development for Technical Physics, Iasi, Romania

JQ-01. Capture of Magnetic Particulate Matter Directly From air on Silicon Substrates. L. Abelmann1,2 1. Korea Institute of Science and Technology Europe Forschungsgesellschaft mbH, Saarbrucken, Germany; 2. Universität Twente, Enschede, Netherlands

JQ-02. Hybrid Coil Design for Shapeable Magnetic Field for Transcranial Magnetic Stimulation. J. Boldrey1, G. Goss1, Z. Higgs1 and D.C. Jiles1. 1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States

JQ-03. Optimum Design of the Eccentric Trapezoidal Magnetic Stimulation Coil With Trade-off Between Stimulation Effect and Heat Dissipation. X. Fang1, W. Liu1, Y. Luo1, C. Liu2 and Z. He2 1. College of Nuclear Technology and Automation Engineering, Chengdu University of Technology, Sichuan, China; 2. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, China

JQ-04. Enhanced Magnetorheological Response of Particle Added Carbonyl Iron Suspension. H. Kim1 and H. Choi1. 1. Inha University, Incheon, The Republic of Korea

JQ-05. Fabrication and Magnetorheological Characteristics of Core-Shell Typied Poly(2-Methylaniline)/Carbonyl Iron Microspheres. Q. Lu1 and H. Choi1. 1. Inha University, Incheon, The Republic of Korea

JQ-06. Development of Individualized Brain Model and Physical Phantom of Small Animals for Experimental Verification of Transcranial Magnetic Stimulation. C. Nimmonkar1,2, E. Knight1, H.A. Magsood1, I.C. Carmona1 and R.L. Hadimani1,3 1. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Mills E. Godwin High School, Richmond, VA, United States; 3. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States

JQ-08. Design and Analysis of High-Gradient Magnetic Field Source at Micro-Scale for Microfluidic Magnetophoresis Applications. V.K. Yadav1, S. Das2 and D. Mallick1 1. Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India; 2. Centre for Applied Research in Electronics, Indian Institute of Technology Delhi, New Delhi, India

JQ-09. Research on Cell Proliferation Model Based on A549 Cell Line With Magnetic Field Intervention. N. Zhang1,2, Z. Wang1, S. Ning2, S. Wang1, B. Lai4, T. Zhu1 and H. Qiu1 1. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. Department of Oncology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 3. School of Electronic Information and Artificial Intelligence, Shaanxi University of Science and Technology, Xi’an, China; 4. Quanzhou Experimental Middle School, Quanzhou, China

ON-DEMAND SESSIONS

Session JR

NANOPARTICLES AND NANOWIRES (Poster Session)

Mariana Proenca, Chair
IFIMUP (Portugal) and ISOM-UPM (Spain), Porto, Portugal


JR-02. Size-Specific Magnetic Configurations in Epitaxial Iron Nano-Cuboids. S. Guo1, M. Henschel1, V. Neu1, T. Blom2, D. Pohl3 and K. Leistner1 1. Leibniz-Institut fur Festkorper- und Werkstoffforschung Dresden eV, Dresden, Germany; 2. Laboratoire de Physique et Chimie des Nano-Objets, Université de Toulouse, Toulouse, France; 3. Dresden Center for Nanoanalysis (DCN), Center for Advancing Electronics Dresden (cfaed), TU Dresden, Dresden, Germany
Temperature-Dependent FORC Investigation of Electrodeposited Magnetic Shape Memory Nanowires

M. Varga 1, 2, L. Galdun 1, B. Kunca 1, K. Saksl 4, P. Diko 3 and R. Varga 1

Optimal Control of Magnetization Switching in Nanowires.

M. Badarneh 1, G. Kwiatkowski 1 and P. Bessarab 1, 2
1. Science Institute, University of Iceland, Haskoli Islands, Reykjaviq, IS; academic, Reykjaviq, Iceland; 2. National Research Saint Petersburg State University of ITMO, St. Petersburg, Russian Federation

Isotropic Magnetic Behavior of Multi-Segmented FeCo Nanowire Arrays.

V.M. Andrade 1, S. Caspani 1, J. Pedro Esteves de Araujo 1, C. Sousa 1 and M.P. Proenca 1, 2
1. Universidade do Porto Instituto de Fisica dos Materiais Instituto de Nanociencia e Nanotecnologia, Porto, Portugal; 2. (b) ISOM - Institute of Optoelectronic and Microtechnology Systems, Technical University of Madrid (UPM), Madrid, Spain

Core-Shell and Bi-Segmented Cobalt-Nickel Nanorods Prepared by Electroless Deposition.

E. Denisova 1, 2, L. Chekanova 1, S.V. Komogortsev 1, M.V. Rautskii 1, I.V. Nemtsev 1, 2, R. Iskhakov 1, V.V. Tkachev 1, V.S. Plotnikov 3 and M.V. Dolgopolova 2
1. Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Krasnoyarsk, Russian Federation; 2. Siberian Federal University, Krasnoyarsk, Russian Federation; 3. Far Eastern Federal University, Vladivostok, Russian Federation

Unexpected Longitudinal Kerr Rotation in two Dimensional Magneto Plasmonic Structure.

S. Sadeghi 1 and S. Hamidi 1
1. Laser and Plasma research Institute, Shahid Beheshti University, Tehran, The Islamic Republic of Iran

The Annealing Effect on Domain Wall Dynamics in Wires With Induced Gradient of the Perpendicular Anisotropy.

L. Fecova 1, 2, K. Richter 1, 3 and R. Varga 1


A. Mourkas 1, A. Zarlahia 1, N. Kourkoumelis 2 and I.V. Panagiotopoulos 1
1. Materials Science and Engineering, University of Ioannina, Ioanna, Greece; 2. Faculty of Medicine, University of Ioannina, Ioanna, Greece

Monte Carlo and Experimental Study of the Magnetic Relaxation of Superparamagnetic Nanoparticle Ensembles.

É. Martin 1, Q. Vuong 1 and Y. Gossuin 1
1. Service de Physique Biomédicale, Universite de Mons Faculte de Medecine et Pharmacie, Mons, Belgium

JR-12. Field Dependence of Blocking and Irreversibility Temperature in Fe3O4 Magnetic Nanoparticles Coated by Oleic and Citric Acid. A. Galluzzi1,2, M. Modestino1, S. Pace1,2, M. Iuliano3, P. Ciambelli3, M. Sarno4 and M. Polichetti1,2 1. Department of Physics “E.R. Caianiello”, Universita degli Studi di Salerno, Fisciano, Italy; 2. CNR-SPIN, Consiglio Nazionale delle Ricerche, Fisciano, Italy; 3. Department of Industrial Engineering, Universita degli Studi di Salerno, Fisciano, Italy; 4. NANO_MATES Research Centre, Universita degli Studi di Salerno, Fisciano, Italy

JR-13. Deducing Uniaxial Anisotropy for Various NiCr Nanostructures. M. Bohra1, S. Battula2 and V. Alman1 1. Physics, Mahindra Ecole Centrale, Hyderabad, India; 2. Electrical and Electronics, Mahindra Ecole Centrale, Hyderabad, India

ON-DEMAND SESSIONS

Session JS

MAGNETO-CALORIC AND MAGNETO-OPTIC MATERIALS AND DEVICES
(Poster Session)

Lei Bi, Co-Chair
University of Electronic Science and Technology of China, Chengdu, China

Karl Sandeman, Co-Chair
Brooklyn College, Brooklyn, NY, United States

JS-01. Magnetic Emulsions as Prospective Magneto-Optical Media. C.V. Yerin1 and S.S. Belykh1. 1. Physical and Technical Faculty, North Caucasus Federal University, Stavropol, Russian Federation

JS-02. Design Improvements for a Magnetic Field Pulser: a Look Into Switching Device and Circuit Effects. W. Theh1, N. Prabhu Gaunkar1 and M. Mina1. 1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States
JS-03. Photonic Crystal Nanostructures With the Magnetic Layer of Gradient Thickness for Optical Magnetic Switching. O. Borovkova¹, M. Kozhaev¹,², A. Kalish¹,² and V.I. Belotelov¹,² ¹. Lomonosov Moscow State University, Faculty of Physics, Moscow, Russian Federation; ². Russian Quantum Center, Moscow, Russian Federation; ³. Institute of Physics, Moscow, Russian Federation

JS-04. Enhancement of a Diffracted Beam by Optimizing an Incident Beam and Cap Layer Thickness in a Domain-Wall-Motion Type Light Modulator Array. R. Higashida¹, N. Funabashi¹, K. Aoshima¹ and K. Machida¹ ¹. Nihon Hoso Kyokai, Shibuya-ku, Japan

JS-05. Amplification of Faraday Rotation in Iron Garnets Using a Multilayer Fabry-Perot Cavity. A. Schwarz¹ ¹. Electrical and Computer Engineering, University of Minnesota Twin Cities, Minneapolis, MN, United States

JS-06. Inverse Magnetocaloric Effect and the Magnetostructural Transition in Pr₀.₁Cₐ₀.₈₅MnO₃ Manganite. K. Thangavel¹,², A.V. Morozkin³, M. V R K⁴, S. Rayaprol⁴, A. Pöppl² and N. R¹ ¹. Physics, Indian Institute of Technology Madras, Chennai, India; ². Felix Bloch Institute for Solid State Physics, Leipzig University, Leipzig, Germany; ³. Chemistry, Moscow Lomonosov State University, Moscow, Russian Federation; ⁴. Mumbai Centre, UGC-DAE Consortium for Scientific Research, Mumbai, India

JS-07. Magnetocaloric Study of La₀.₄₅Nd₀.₂₅Sr₀.₃MnO₃/MO (MO=CuO, CoO and Ni) Nanocomposites. D. Neupane¹, A. Pathak² and S.R. Mishra¹ ¹. Physics and Materials Science, The University of Memphis, Memphis, TN, United States; ². Physics, SUNY Buffalo State College, Buffalo, NY, United States

JS-08. Structural and Electronic Properties on Gd₃Fe₅ₓAlₓO₁₂ (x= 0.25, 0.5, 1.00) Using Rietveld, Maximum Entropy Method (MEM). D. Neupane¹, K.S. Ali² and S.R. Mishra¹ ¹. Physics and Materials Science, The University of Memphis, Memphis, TN, United States; ². Harmony School of Excellence, Houston, TX, United States

JS-09. On the Real Potential of R₁₋ₓAₓMnO₃ Oxides in Magnetic Cooling: Pr₀.₆Sr₀.₄MnO₃ as a Case of Study. O. Chdil¹, M. Balli¹, O. Mounkachi² and K. El maalam³ ¹. AMEEC team, LERMA, College of Engineering and Architecture, Universite Internationale de Rabat, Sale, Morocco; ². LaMCSci Laboratory, B.P. 1014, Faculty of science, Universite Mohammed V de Rabat, Rabat, Morocco; ³. Materials and Nanomaterials Center, Moroccan Foundation for Advance Science Innovation and Research, Rabat, Morocco
JS-10. Multiferroic Electroactive Polymer Blend/Ferrite Nanocomposite Film for Cooling Devices. P. Thandapani1, F. Béron1, R. Aepuru2, M. Ramalinga Viswanathan1, F. Luis Zabotto3, J. A Jiménez3 and J. C. Denardin7
1. Materials and Low-temperature Laboratory, Institute of Physics Gleb Wataghin, Universidade Estadual de Campinas, Campinas, Brazil; 2. Department of Mechanical Engineering, Faculty of Engineering, Universidad Tecnologica Metropolitana, Santiago, Chile; 3. Advanced Ceramics and Nanotechnology Laboratory, Department of Materials Engineering, Faculty of Engineering, Universidad de Concepcion, Concepcion, Chile; 4. Technological Development Unit (UDT), Universidad de Concepcion, Concepcion, Chile; 5. Physics Department, Universidade Federal de Sao Carlos, Sao Carlos, Brazil; 6. Department of Physical Metallurgy, Consejo Superior de Investigaciones Científicas, Madrid, Spain; 7. Department of Physics, Universidad de Santiago de Chile, Santiago de Chile

ON-DEMAND SESSIONS

Session JT

MAGNETO-CALORIC MATERIALS AND DEVICES II (Poster Session)

Jia-Yan Law, Chair
Universidad de Sevilla, Sevilla, Spain

JT-01. Elastocaloric and Magnetocaloric Effects Through the Martensitic Transformation in Bulk Ni35Fe11Mn2Ga27 Alloys Produced by arc-Melting and Spark Plasma Sintering. J.D. Navarro-Garcia1, J.P. Camarillo-Garcia2, F. Alvarado-Hernández2, J.L. Sánchez Llamaza1res and H. Flores-Zúñiga1
1. Potosino Institute of Scientific and Technological Research, San Luis Potosi, Mexico; 2. Universidad Autonoma de Zacatecas, Zacatecas, Mexico

JT-02. Enhancement of Curie Transition by Substituting Sb in MnCo1-xSbxGe (x=0, 0.2, 0.4, 0.6) Alloys and its Structural, Morphological, Magnetic, Magnetocaloric Investigations. D. U1,3, M. S2 and V. C1
1. Department of Nuclear Physics, University of Madras, Chennai, India; 2. Physics and Materials Chemistry Division, National Chemical Laboratory CSIR, Pune, India; 3. Department of Physics, Indian Institute of Science Education and Research, Pune, India

JT-03. Magnetocaloric Effect in the Alloy Ni45Mn44In11 Subjected to the Thermobaric Treatment. S. Emelyanova1, T. Dyachkova2, A. Tyutyunnik2, Y. Zainulin3, E. Marchenko1 and V. Marchenko1,3

JT-05. Functional Heusler Nanowires. L. Galdun1, M. Varga1, P. Szabo1, V. Vega2, V. Prada1 and R. Varga1, 1. CPM-TIP, Univerzita Pavla Jozefa Safarika v Kosiciach, Kosice, Slovakia; 2. Condensed matter physics, Univerzita Pavla Jozefa Safarika v Kosiciach, Kosice, Slovakia; 3. Institute of Experimental Physics, Slovenska Akademia Vied v Kosiciach, Kosice, Slovakia; 4. Universidad de Oviedo, Oviedo, Spain


JT-08. High Efficient Magnetic Refrigeration Using Static Bias Magnetic Field. H. Mamiiya1, N. Terada1 and H. Kitazawa1 1. Busshitsu Zairyo Kenkyu Kiko, Tsukuba, Japan

JT-09. Substitution of Fe by Ti and Mn in GdFeSi. S. Platonov1, A. Kuchin1, A. Lukoyanov1, A. Volegov1, V. Gaviko1,2, M. Yakovleva1, M. Mikhailov Institute of Nuclear Physics, Ekaterinburg, Russian Federation; 2. Ural Federal University, Ekaterinburg, Russian Federation

JT-11. Magnetocaloric Effect in Hf$_{1-x}$Ta$_x$Fe$_2$B$_y$. K. Matsumoto$^1$, K. Ishihara$^1$, J. Gouchi$^2$, Y. Uwatoko$^3$ and K. Hiraoka$^1$. 1. Ehime University, Matsuyama, Japan; 2. Institute for Solid State Physics, University of Tokyo, Kashiwa, Japan

JT-12. Magnetocaloric Properties of Ball Milled Gd Powder Subjected to Heat Treatments. A.V. Arkhipov$^1$, D.S. Neznakhin$^1$, S.V. Andreev$^1$, A. Larrañaga$^2$, G.V. Kurlyandskaya$^{1,3}$ and A. Svalov$^1$. 1. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation; 2. Servicios Generales de Investigación, Universidad del País Vasco (UPV/EHU), Leioa, Spain; 3. Departamento de Electricidad y Electrónica, Universidad del País Vasco (UPV/EHU), Bilbao, Spain

JT-13. Magnetic and Transport Properties of Multicomponent Laves Phase Intermetallic Compound Gd$_{0.2}$Tb$_{0.2}$Dy$_{0.2}$Ho$_{0.2}$Er$_{0.2}$Al$_2$. J. P K$^1$, A. J$^2$, A. Nigam$^3$ and N. R$^1$. 1. Indian Institute of Technology Madras, Chennai, India; 2. DRDO Defence Metallurgical Research Laboratory, Hyderabad, India; 3. Tata Institute of Fundamental Research, Mumbai, India

ON-DEMAND SESSIONS

Session JU

MAGNETO-ELASTIC MATERIALS AND DEVICES

(Poster Session)

Dhritiman Bhattacharya, Chair
Georgetown University, Washington, DC, United States

JU-01. The Design and Output Characteristics of Ultrasonic Transducer Based on Rare-Earth Giant Magnetostrictive Material. Y. Li$^1$, W. Huang$^2$ and B. Wang$^2$. 1. School of Electrical Engineering and Automation, Qilu University of Technology, Jinan, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

JU-02. Structural and Magnetic Phase Transitions in Fe$_{100-x}$Al$_x$ Alloys: an ab Initio Studies. A. Koshkin$^1$, M. Zagrebin$^1$, M. Matyunina$^1$, V. Sokolovskiy$^1$ and V. Buchelnikov$^1$. 1. Celayatin State University, Celyabinisk, Russian Federation

JU-03. Effects of Geometrical and Physical Parameters on a Cantilever Beam Energy Harvester in Periodic Steady State Conditions. V. Apicella$^1$, D. Davino$^1$ and C. Visone$^2$. 1. Dipartimento di Ingegneria, Universita degli Studi del Sannio, Benevento, Italy; 2. DIETI - Dipartimento di Ingegneria Elettrica e Tecnologie dell’Informazione, Universita degli Studi di Napoli Federico II, Napoli, Italy


JU-07. High-Frequency Losses Calculating Model for Magnetostriective Materials Considering Variable DC Bias. P. Guo, W. Huang, W. Guo and L. Weng. Hebei University of Technology School of Electrical Engineering, Tianjin, China

JU-08. High Frequency Characteristic Test and Loss Calculation of TbDyFe Alloy Under Variable Temperature. W. Huang, Z. Xia and P. Guo. Hebei University of Technology, Tianjin, China


JU-12. Enhanced Power and Energy Conversion of Magnetoelectric Laminate Heterostructures Based on High-Permeability FeCuNbSiB Nanocrystalline. L. Liu, J. Qiu, Y. Huang, Q. Chang and H. Liu. Chongqing University College of Optoelectronic Engineering, Chongqing, China
JW-01. Anisotropic Nanocrystalline SmCo5 Permanent Magnet Prepared by Hot Extrusion. H. Wang1, D. Zhang1, Y. Tang1, Y. Li2, W. Liu4 and M. Yue1. 1. Faculty of Materials and Manufacturing, Beijing University of Technology, Beijing, China

JW-02. Magnetic Properties of (Sm,Zr)Fe18 Melt-Spun Ribbons. T. Saito1. 1. Chiba Institute of Technology, Narashino, Japan

JW-03. Preparation of SmCo5 and Fe Magnetic Precursor for Realizing Anisotropic Bulk Nanocomposite Magnet by low Oxygen Powder Metallurgy Process. K. Park1,2, Y. Hirayama2, W. Yamaguchi2, M. Kobashi2 and K. Takagi2. 1. Department of Materials Process Engineering, Nagoya University, Nagoya, Japan; 2. Magnetic Powder Metallurgy Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan

JW-04. Measurement and Analysis of Temperature-Dependent AC Loss of Sm2Co17 Magnets. Y. Li1, Z. Fan1, C. Zhang1 and H. Geng1. 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China


JW-06. Magnetic Properties of Sm(FeTi)12 hot Deformed Magnets. T. Saito1, Y. Ogawa1 and D. Nishio-Hamane2. 1. Chiba Kogyo University, Chiba, Japan; 2. The University of Tokyo, Bunkyo-ku, Japan

JW-07. Phase and Magnetism Evolution in Pr2Fe14C System Upon B Doping and Heat Treatment. H. Yao1, H. Zhang1, W. Liu4 and M. Yue1. 1. Beijing University of Technology, Beijing, China


JW-09. Study on Magnetization Reversal Processes of Anisotropic HDDR Pr2Fe14B-Type Magnetic Materials. Z. Lin1, J. Han1, Y. Zhang1, X. Zhang1, S. Liu4, C. Wang1, J. Yang1 and Y. Yang1. 1. Peking University, Beijing, China
JW-10. Optimisation of Atomistic Modelling Parameters for Nd2Fe14B-Type Rare Earth Ferromagnets, Using the Curie Temperature and First Order Magnetic Phase Transitions as Figures of Merit. A. Naden1, R.W. Chantrell1 and R.F. Evans1 1. Physics, University of York, York, United Kingdom


JW-12. Fabrication and Characterisation of Polymer-Bonded Flexible Anisotropic Micro-Magnet Arrays. E. Fontana1, L. Motyckova1, F.O. Keller1, G. Groza1, M. Bonfim2, L. Ranno1, T. Devillers1 and N. Dempsey1 1. Institut Néel, UGA-CNRS, Grenoble, France; 2. DELT, Universidade Tecnologica Federal do Paraiba, Curitiba, Brazil

JW-13. Magnetic Anisotropy of Chemically Ordered CoPt and FePt Nanoparticles, why is it so Different? F. Tournus1, A. Tamion1, A. Rogalev2, F. Wilhelm2, J. Gutierrez3, L.E. Diaz-Sanchez3, G.M. Pastor4 and V. Dupuis1 1. Institut Lumiere Matiere, Villeurbanne, France; 2. ESRF, Grenoble, France; 3. Universidad Autonoma del Estado de Mexico, Toluca, Mexico; 4. Institut fur Theoretisches Physik, Universitat Kassel, Kassel, Germany


JW-15. Magnetic Properties of Bulk Magnets Manufactured by the Cryo-Milled Mn54Bi46 Powder. C. Bae1, H. Lee1, M. Kang1 and J. Kim1 1. Materials Science and Chemical Engineering, Hanyang University - Ansan Campus, Ansan-si, The Republic of Korea


JW-17. Synthesis of α″-(Fe, M)16N2 Nanoparticles Obtained by Hydrogen Reduction and Subsequent Nitridation Starting From α-(Fe, M)OOH (M= Co, Al). M. Tobise1 and S. Saito1 1. Electronic engineering, Tohoku University, Sendai, Japan

JW-18. Permanent Magnet Non-Linear Demagnetization Model for FEM Simulation Environment. W. Bekir1, O. Messal1 and A. Benabou1 1. Univ. Lille, Arts et Metiers Institute of Technology, centrale Lille, Junia, ULR 2697 – L2EP, F-5900 Lille, France, Lille, France

Monday 177
JX-01. Magnetic and Structural Properties Analysis of Cerium Substituted Nickel Zinc Ferrites. R. Dosoudil¹, M. Šoka¹, M. Ušáková¹, E. Ušák¹, V. Jančárík¹ and E. Dobročka²
1. Institute of Electrical Engineering, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology in Bratislava, Slovenska technická univerzita v Bratislave, Bratislava, SK, academic, Bratislava, Slovakia; 2. Institute of Electrical Engineering, Slovenska akademia vied, Bratislava, Slovakia

JX-02. Oxidation Process of FeOₓ Films and the Growth Conditions of Epitaxial Fe₃O₄ on GaAs(100). Z. Zhang¹, X. Lu¹ and Y. Xu¹ 1. Nanjing University, Nanjing, China


JX-04. Quantitative Retrieving of the Magnetic Moment of Iron Oxide Nanoparticles Through Structural Characterizations. M.S. Darcheville¹, C. Boscher¹, A. Adenot-Engelvin¹, J. Grenache², C. Lefevre³, C. Sanchez⁴ and A. Thiaville⁵
1. Commissariat a l’energie atomique et aux energies alternatives Direction des applications militaires Le Ripault, Monts, France; 2. Institut des Molecules et Materiaux du Mans, Le Mans, France; 3. Institut de Physique et Chimie des Materiaux de Strasbourg, Strasbourg, France; 4. UPMC-CNRS-Collège de France, Paris, France; 5. Laboratoire de Physique des Solides, Orsay, France

JX-05. Soft Magnetic Properties of Ni₈₁Fe₁₉ and its Domain Structure by Micromagnetic Simulation. Z. He¹, C. Wu¹, Y. Wang¹, X. Jiang¹, Z. Yu¹, Z. Lan¹ and K. Sun¹ 1. University of Electronic Science and Technology of China, Chengdu, China
JX-06. \( \text{La}_6\text{Pd}_{2+x}\text{Sb}_{15} \) (\( x = 0.28 \)): a Rare-Earth Palladium Intermetallic Compound With Extended Pnictogen Ribbons. M.I. Sturza, M. Amigó, J. Faciò, F. Caglieris, S. Wurmehl and B. Büchner. 1. Synthesis and Crystal Growth, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden eV, Dresden, Germany; 2. Institute for Theoretical Solid State Physics, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden eV, Dresden, Germany; 3. Transport and Scanning Probe Microscopy Research Team, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden eV, Dresden, Germany; 4. Institute for Solid State Research, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden eV, Dresden, Germany

JX-07. Pressure Effect on Magnetization of Heusler Alloy FeCoCrAl. S. Tsujikawa, I. Shigeta, J. Gouchi, T. Kanomata, R. Y. Umetsu, Y. Uwatoko and M. Hiroi. 1. Department of Physics and Astronomy, Kagoshima University, Kagoshima, Japan; 2. Institute for Solid State Physics, University of Tokyo, Kashiwa, Japan; 3. Research Institute for Engineering and Technology, Tohoku Gakuin University, Tagajo, Japan; 4. Institute for Materials Research, Tohoku University, Sendai, Japan

JX-08. Critical Behavior of the Magnetization in Heusler Alloy Co\(_2\)TiGa\(_{0.8}\)Sn\(_{0.2}\). T. Yokoyama, I. Shigeta, A. Nomura, K. Yubuta, T. Yamauchi, T. Kanomata, H. Nishihara, R. Y. Umetsu and M. Hiroi. 1. Department of Physics and Astronomy, Kagoshima University, Kagoshima, Japan; 2. Institute for Materials, Tohoku University, Sendai, Japan; 3. Institute for Solid State Physics, University of Tokyo, Kashiwa, Japan; 4. Research Institute for Engineering and Technology, Tohoku Gakuin University, Tagajo, Japan; 5. Faculty of Science and Technology, Ryukoku University, Otsu, Japan

JX-09. Antisite Disorder and Defect Phase Segregation and its Role in Magnetic Properties of Mn\(_2\)NiSn. S.V. Malik, A. Nigam and K. Priolkar. 1. School of Physical and Applied Sciences, Goa University, Taleigao, India; 2. Tata Institute of Fundamental Research, Mumbai, India

JX-10. High Entropy Alloys: the Next big Thing in Functional Magnetic Alloys. J. Harris, M. Anis, R. Osman, R. Rowan-Robinson, A. Quinata-Nedelcos and N. Morley. 1. The University of Sheffield, Sheffield, United Kingdom; 2. New Model Institute for Technology and Engineering (NMITE), Hereford, United Kingdom

JX-11. Heat Treatment Investigations of Fe-Based Alloys. M.G. Ozden, Z. Leong and N. Morley. 1. The University of Sheffield, Sheffield, United Kingdom

JX-12. Withdrawn

ON-DEMAND SESSIONS

Session JY

SOFT MAGNETIC MATERIALS AND APPLICATIONS
(Poster Session)

Paola Tiberto, Co-Chair
INRIM, Torino, Italy
Carlo Stefano Ragusa, Co-Chair
Politecnico di Torino, Torino, Italy


JY-02. Magneto-Impedance Behavior of Soft Ferromagnetic Microwires at GHz-Frequency for the Application of High-Performance Magnetic Sensory Devices. J. Alam\(^\text{1}\), M.G. Nematov\(^\text{1,2}\), N.A. Yudanov\(^\text{1}\) and L. Panina\(^\text{1,2}\). 1. Technology of Electronics Materials, National University of Science and Technology, MISiS, Moscow, Russian Federation; 2. Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation

JY-03. Transformation of the Magnetostriction of Amorphous Microwires by Heat Treatment. S. Evstigneeva\(^\text{1}\), M.G. Nematov\(^\text{1}\), I. Baraban\(^\text{2}\), V. Rodionova\(^\text{2}\) and L. Panina\(^\text{1,2}\). 1. National University of Science and Technology, MISiS, Moscow, Russian Federation; 2. Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation

JY-04. Correlation Between Structural Relaxation and Magnetic Behavior in Amorphous Submicron Magnetic Wires. S. Corodeanu\(^\text{1}\), C. Rotarescu\(^\text{1}\), C. Hlenschi\(^\text{1}\), H. Chiriac\(^\text{1}\), N. Lupu\(^\text{1}\) and T.A. Ovari\(^\text{1}\). 1. Dept. of Magnetic Materials & Devices, National Institute of R&D for Technical Physics, Iasi, Romania
JY-05. Study on the Soft and High-Frequency Magnetic Properties of Amorphous Co-Fe-B Thin Films With Various Co Compositions. Y. Endo1, H. Tanaka1, S. Hashi2 and T. Miyazaki3. 1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 3. Technical Division, School of Engineering, Tohoku University, Sendai, Japan

JY-06. Anisotropy Field Change With Piezoelectric Strain in Ultrathin Pt/Co(Fe)B/Ir Films. K.N. Alshammari1, M. Ali1 and T. Moore1. 1. School Of Physics and Astronomy, University of Leeds, Leeds, United Kingdom

JY-07. Effect of Meander Structure on Magnetoimpedance Characteristics in FeNi/Cu/FeNi Films. J. Jiang1,2, F. Jin1,2, K. Dong1,2, W. Mo1,2, Y. Hui1,2, J. Song1,2, L. Xu1,2 and Y. Biao1,2. 1. School of Automation, China University of Geosciences, Wuhan, China; 2. Hubei key Laboratory of Advanced Control and Intelligent Automation for Complex Systems, China University of Geosciences, Wuhan, China

JY-08. Magnetic Properties Evolution During Thermal Ageing of High Permeability Nanocrystalline FeSiCuNbB Alloys Annealed With Longitudinal Field. R. Saoudi1, L. Morel1 and M. Raulet1. 1. Ampère laboratory, UMR 5005, University of Lyon1, Villeurbanne, France


JY-10. Magnetic Properties Measurement and Loss Calculation of the High-Frequency Core With Air Gap. Y. Li1, H. Liu1, H. Sun1 and Z. Wan1. 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

JY-11. Temperature Dependence of Powder Cores Magnetic Properties for High Frequency Applications. W. Zhang1, Y. Li1, Q. Yang2, Z. Lin1 and M. Yang1. 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. School of Electrical and Electronic Engineering, Tianjin University of Technology, Tianjin, China

JY-12. Comprehensive Analysis of Nanocrystalline Ribbon Cores in High-Power-Density WPT Pads for Electric Vehicles. W. Zhang1, Y. Li1, Q. Yang2, Z. Lin1, M. Yang1 and M. Mi1. 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. School of Electrical and Electronic Engineering, Tianjin University of Technology, Tianjin, China

JY-13. The Microwave Absorption Properties of Fe16N2 Nanoparticles. Y. Wang1, Z. Lin1, G. Qiao2, Z. Liu1, P. Zhang1, K. Li1, W. Yang1, J. Han1, S. Liu1, C. Wang1, L. Qiao1 and J. Yang1. 1. Physics, Peking University, Beijing, China; 2. Peking University, Beijing, China; 3. Physics, Lanzhou University, Lanzhou, China
JY-14. Design and Simulation of Electromagnetic Metamaterial Unit for High-Frequency Transformer. Y. Wang¹, Y. Wang², S. Wu¹ and W. Fu² ¹. School of Mechanical Electronic & Information Engineering, China University of Mining and Technology - Beijing Campus, Beijing, China; ². Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong

JY-15. Linear-to-Circular Polarization Converter Based on Meander-Line Metasurfaces. Y. Zhao¹, J. Fu¹, W. Chen¹, B. Lv² and Z. Wang¹ ¹. Harbin Institute of Technology, Harbin, China; ². Harbin Engineering University, Harbin, China

JY-16. Design of a Rectenna With Metamaterial Grounding Plane. F.L. Souza¹ and Ú.d. Resende¹ ¹. Electrical engineering, Centro Federal de Educacao Tecnologica de Minas Gerais, Belo Horizonte, Brazil


JY-18. Fabrication and Shear Response of Conducting Polymer Coated Zinc Ferrite Particles Under Magnetic/Electric Field. T. Kim¹ and H. Choi¹ ¹. Inha University, Incheon, The Republic of Korea

JY-19. Modelling of the Intracrystalline Interactions in Trigonal Weak Ferromagnets With Zero Orbital Moment. K. Seleznyova¹, Y. Mogilenec¹, S. Yagupov¹, M. Strugatsky¹ and J. Kliava² ¹. Physics and Technology Institute, V.I. Vernadsky Crimean Federal University, Simferopol, Russian Federation; ². LOMA, Universite de Bordeaux, Talence, France
<table>
<thead>
<tr>
<th>Authors</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>Aydin, M. (BG-04)</td>
<td>122</td>
</tr>
<tr>
<td>Ang, C.C. (HH-04)</td>
<td>114</td>
</tr>
<tr>
<td>Anselone, P. (EB-11)</td>
<td>86</td>
</tr>
<tr>
<td>Anselone, P. (GC-04)</td>
<td>116</td>
</tr>
<tr>
<td>Ansermet, J. (FC-02)</td>
<td>100</td>
</tr>
<tr>
<td>Antonov, G. (CS-02)</td>
<td>67</td>
</tr>
<tr>
<td>Antonov, V. (GA-05)</td>
<td>113</td>
</tr>
<tr>
<td>Aoki, K. (JP-07)</td>
<td>166</td>
</tr>
<tr>
<td>Aoshima, K. (JS-05)</td>
<td>171</td>
</tr>
<tr>
<td>Aparicio, J. (JJ-03)</td>
<td>174</td>
</tr>
<tr>
<td>Aquino, H.O. (EE-11)</td>
<td>92</td>
</tr>
<tr>
<td>Arena, D. (IG-06)</td>
<td>13</td>
</tr>
<tr>
<td>Ari-Gur, P. (JE-05)</td>
<td>156</td>
</tr>
<tr>
<td>Arkhipov, A.V. (JT-12)</td>
<td>174</td>
</tr>
<tr>
<td>Array, I. (DB-09)</td>
<td>71</td>
</tr>
<tr>
<td>Array, I. (BH-14)</td>
<td>139</td>
</tr>
<tr>
<td>Array, I. (IR-16)</td>
<td>145</td>
</tr>
<tr>
<td>Arndt, C. (JG-08)</td>
<td>154</td>
</tr>
<tr>
<td>Arnold, D. (JD-02)</td>
<td>13</td>
</tr>
<tr>
<td>Arrogi, N. (ED-05)</td>
<td>103</td>
</tr>
<tr>
<td>Arriola Córdova, A.Y. (HB-01)</td>
<td>121</td>
</tr>
<tr>
<td>Artemchuk, P. (EB-10)</td>
<td>8</td>
</tr>
<tr>
<td>Artémova, A. (ER-13)</td>
<td>97</td>
</tr>
<tr>
<td>Asta, N. (JF-02)</td>
<td>107</td>
</tr>
<tr>
<td>Assalone, P. (GD-04)</td>
<td>116</td>
</tr>
<tr>
<td>Asenjo, A. (JA-07)</td>
<td>149</td>
</tr>
<tr>
<td>Azuma, T. (AV-01)</td>
<td>21</td>
</tr>
<tr>
<td>Azuma, T. (AV-01)</td>
<td>31</td>
</tr>
<tr>
<td>Baba, S. (AC-18)</td>
<td>8</td>
</tr>
<tr>
<td>Babayev, G.V. (IR-14)</td>
<td>110</td>
</tr>
<tr>
<td>Babenkov, S. (FH-13)</td>
<td>88</td>
</tr>
<tr>
<td>Babu, N.K. (EC-08)</td>
<td>144</td>
</tr>
<tr>
<td>Bachmann, J.A. (JD-05)</td>
<td>174</td>
</tr>
<tr>
<td>Bachmann, J. (JD-06)</td>
<td>74</td>
</tr>
<tr>
<td>Bacc, C.H. (CC-03)</td>
<td>52</td>
</tr>
<tr>
<td>Back, C.H. (EB-09)</td>
<td>86</td>
</tr>
<tr>
<td>Back, C.H. (FD-05)</td>
<td>103</td>
</tr>
<tr>
<td>Baca, M. (CM-07)</td>
<td>165</td>
</tr>
<tr>
<td>Baca, M. (CM-07)</td>
<td>177</td>
</tr>
<tr>
<td>Badarneh, M. (JR-04)</td>
<td>169</td>
</tr>
<tr>
<td>Badelmin, A. (DP-06)</td>
<td>81</td>
</tr>
<tr>
<td>Badura, A. (FH-08)</td>
<td>109</td>
</tr>
<tr>
<td>Bae, C. (JW-05)</td>
<td>176</td>
</tr>
<tr>
<td>Bae, C. (JW-15)</td>
<td>177</td>
</tr>
<tr>
<td>Bae, M. (AR-12)</td>
<td>16</td>
</tr>
<tr>
<td>Baek, Y. (AU-08)</td>
<td>20</td>
</tr>
<tr>
<td>Backs, K. (HK-02)</td>
<td>122</td>
</tr>
<tr>
<td>Balk, C.R. (BE-07)</td>
<td>27</td>
</tr>
<tr>
<td>Balk, C.R. (BD-09)</td>
<td>15</td>
</tr>
<tr>
<td>Bai, B. (AS-15)</td>
<td>18</td>
</tr>
<tr>
<td>Bai, B. (AS-13)</td>
<td>18</td>
</tr>
<tr>
<td>Bai, B. (AS-14)</td>
<td>18</td>
</tr>
<tr>
<td>Bai, B. (AS-16)</td>
<td>18</td>
</tr>
<tr>
<td>Bai, H. (DC-08)</td>
<td>121</td>
</tr>
<tr>
<td>Bai, H. (DC-08)</td>
<td>121</td>
</tr>
<tr>
<td>Bai, J. (BF-06)</td>
<td>28</td>
</tr>
<tr>
<td>Bai, J. (BT-02)</td>
<td>43</td>
</tr>
<tr>
<td>Bai, J. (JC-09)</td>
<td>153</td>
</tr>
<tr>
<td>Bailleul, M. (HB-03)</td>
<td>85</td>
</tr>
<tr>
<td>Bajarani, K. (HD-04)</td>
<td>126</td>
</tr>
<tr>
<td>Bai, M. (FG-09)</td>
<td>107</td>
</tr>
<tr>
<td>Balachandran, P. (JE-03)</td>
<td>156</td>
</tr>
<tr>
<td>Balakrishnan, P.P. (DE-07)</td>
<td>76</td>
</tr>
<tr>
<td>Balcioglu, S. (JA-07)</td>
<td>149</td>
</tr>
<tr>
<td>Bald, C. (IB-02)</td>
<td>130</td>
</tr>
<tr>
<td>Baldrati, L. (FG-04)</td>
<td>106</td>
</tr>
<tr>
<td>Baldrati, L. (FG-06)</td>
<td>106</td>
</tr>
<tr>
<td>Balle, V. (EC-12)</td>
<td>88</td>
</tr>
<tr>
<td>Balle, R. (IB-02)</td>
<td>98</td>
</tr>
<tr>
<td>Ballet, P. (DC-11)</td>
<td>73</td>
</tr>
<tr>
<td>Balili, M. (JS-09)</td>
<td>171</td>
</tr>
<tr>
<td>Baltz, V. (CD-11)</td>
<td>55</td>
</tr>
<tr>
<td>Baltz, V. (FG-08)</td>
<td>107</td>
</tr>
<tr>
<td>Baltz, V. (FH-02)</td>
<td>108</td>
</tr>
<tr>
<td>Baltz, V. (FH-08)</td>
<td>109</td>
</tr>
<tr>
<td>Bang, S. (JP-04)</td>
<td>165</td>
</tr>
<tr>
<td>Bang, T. (AP-12)</td>
<td>13</td>
</tr>
<tr>
<td>Bang, T. (AQ-07)</td>
<td>14</td>
</tr>
<tr>
<td>Bang, T. (AU-08)</td>
<td>20</td>
</tr>
<tr>
<td>Bang, T. (BQ-05)</td>
<td>38</td>
</tr>
<tr>
<td>Bang, T. (BQ-09)</td>
<td>38</td>
</tr>
<tr>
<td>Bang, T. (BQ-10)</td>
<td>38</td>
</tr>
<tr>
<td>Bang, T. (BR-06)</td>
<td>40</td>
</tr>
<tr>
<td>Bang, T. (BS-02)</td>
<td>41</td>
</tr>
<tr>
<td>Bang, T. (BS-04)</td>
<td>42</td>
</tr>
<tr>
<td>Bang, T. (BV-09)</td>
<td>48</td>
</tr>
<tr>
<td>Bao, X. (AP-10)</td>
<td>12</td>
</tr>
<tr>
<td>Bao, X. (AQ-05)</td>
<td>13</td>
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<tr>
<td>Bao, X. (AU-09)</td>
<td>20</td>
</tr>
<tr>
<td>Bao, X. (BW-02)</td>
<td>48</td>
</tr>
<tr>
<td>Bao, X. (CR-03)</td>
<td>65</td>
</tr>
<tr>
<td>Baraban, I. (JY-03)</td>
<td>180</td>
</tr>
<tr>
<td>Baradac, C. (HB-07)</td>
<td>122</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
<table>
<thead>
<tr>
<th>Name</th>
<th>ID</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baraduc, L.</td>
<td>FB-01</td>
<td>98</td>
</tr>
<tr>
<td>Barilo, S.</td>
<td>JT-10</td>
<td>173</td>
</tr>
<tr>
<td>Barilo, S.</td>
<td>DF-09</td>
<td>78</td>
</tr>
<tr>
<td>Barbour, A.</td>
<td>AB-05</td>
<td>4</td>
</tr>
<tr>
<td>Bardotti, L. (JH-11)</td>
<td></td>
<td>164</td>
</tr>
<tr>
<td>Barilo, S. (DF-09)</td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>Barbour, A. (AB-05)</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Bari, J.</td>
<td></td>
<td>170</td>
</tr>
<tr>
<td>Baris, S. (CE-11)</td>
<td></td>
<td>111</td>
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<td>Baris, S. (CE-11)</td>
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<td>111</td>
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<td>144</td>
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<td>Baris, S. (CD-01)</td>
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<td>170</td>
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<td>144</td>
</tr>
<tr>
<td>Bari, J.</td>
<td></td>
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</tr>
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<td>Baris, S. (CE-11)</td>
<td></td>
<td>111</td>
</tr>
<tr>
<td>Baris, S. (CD-01)</td>
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<td>144</td>
</tr>
<tr>
<td>Bari, J.</td>
<td></td>
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<td>Baris, S. (CD-01)</td>
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<td>Bari, J.</td>
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<td>Baris, S. (CE-11)</td>
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<td>Baris, S. (CD-01)</td>
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<td>Bari, J.</td>
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<td>Baris, S. (CE-11)</td>
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<td>Baris, S. (CD-01)</td>
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</tr>
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</tr>
<tr>
<td>Baris, S. (CD-01)</td>
<td></td>
<td>144</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
Chau, K. (BW-14) .................................. 50
Chau, K. (BW-16) .................................. 50
Chaudhary, R. (JL-06) .................................. 164
Chaudhary, V. (JA-05) .................................. 149
Chaudhary, V. (JA-08) .................................. 149
Chaudhary, V. (JB-03) .................................. 150
Chaudhary, V. (JB-04) .................................. 150
Chaudhary, V. (JB-06) .................................. 151
Chaudhary, V. (JB-07) .................................. 151
Chaudhary, V. (JL-06) .................................. 164
Chaulau, J. (CD-08) .................................. 55
Chavent, A. (AC-06) .................................. 6
Chidi, Q. (JS-09) .................................. 171
Che Lab, N. (AC-07) .................................. 106
Che, P. (ED-12) .................................. 90
Che, P. (HC-07) .................................. 124
Checca, N. (JE-12) .................................. 157
Chechenin, N.G. (IR-14) .................................. 145
Cheekati, S. (JH-05) .................................. 162
Cheemkndil, R. (AE-04) .................................. 10
Chen, L. (BD-01) .................................. 25
Chen, K. (AC-09) .................................. 6
Chen, J. (JB-08) .................................. 151
Chen, J. (IF-04) .................................. 135
Chen, J. (IB-12) .................................. 131
Chen, J. (GB-08) .................................. 115
Chen, J. (ED-12) .................................. 90
Chen, J. (CF-08) .................................. 59
Chen, J. (BB-04) .................................. 23
Chen, H. (HP-09) .................................. 128
Chen, H. (GB-04) .................................. 114
Chen, H. (FH-01) .................................. 108
Chen, H. (DG-04) .................................. 79
Chen, G. (FG-03) .................................. 106
Chen, G. (AU-09) .................................. 20
Chen, G. (AT-05) .................................. 19
Chen, D. (AS-15) .................................. 18
Chen, D. (AS-13) .................................. 18
Chen, D. (AS-14) .................................. 18
Chen, D. (AS-15) .................................. 18
Chen, D. (AS-16) .................................. 18
Chen, G. (AF-05) .................................. 19
Chen, G. (AV-06) .................................. 20
Chen, G. (FG-03) .................................. 106
Chen, H. (AB-02) .................................. 4
Chen, H. (DG-04) .................................. 79
Chen, H. (EQ-09) .................................. 95
Chen, H. (FH-01) .................................. 108
Chen, H. (GB-04) .................................. 114
Chen, H. (HE-05) .................................. 126
Chen, J. (AP-04) .................................. 12
Chen, J. (BB-04) .................................. 23
Chen, J. (BJ-12) .................................. 34
Chen, J. (CF-08) .................................. 59
Chen, J. (ED-12) .................................. 90
Chen, J. (GB-08) .................................. 115
Chen, J. (HB-12) .................................. 131
Chen, J. (HF-04) .................................. 154
Chen, J. (HI-01) .................................. 138
Chen, J. (JB-08) .................................. 151
Chen, K. (AC-09) .................................. 6
Chen, L. (BE-01) .................................. 26
Chen, L. (BQ-12) .................................. 38
Chen, L. (IQ-02) .................................. 142
Chen, L. (JB-10) .................................. 151
Chen, L. (JL-12) .................................. 134
Chen, M. (BF-07) .................................. 28
Chen, M. (BV-02) .................................. 47
Chen, Q. (AR-17) .................................. 16
Chen, S. (BE-05) .................................. 27
Chen, T. (BP-09) .................................. 36
Chen, T. (CC-02) .................................. 52
Chen, T. (CC-10) .................................. 53
Chen, T. (HC-12) .................................. 54
Chen, T. (FH-05) .................................. 108
Chen, W. (CS-07) .................................. 67
Chen, W. (IQ-06) .................................. 142
Chen, W. (JY-15) .................................. 182
Chen, X. (BW-17) .................................. 50
Chen, X. (FB-12) .................................. 100
Chen, X. (HB-12) .................................. 123
Chen, Y. (AQ-04) .................................. 13
Chen, Y. (AR-04) .................................. 15
Chen, Y. (AS-09) .................................. 17
Chen, Y. (AU-11) .................................. 21
Chen, Y. (AV-05) .................................. 22
Chen, Y. (BR-09) .................................. 40
Chen, Y. (BU-03) .................................. 45
Chen, Y. (BU-04) .................................. 45
Chen, Y. (BU-05) .................................. 45
Chen, Y. (CF-09) .................................. 59
Chen, Y. (CS-09) .................................. 68
Chen, Z. (AR-06) .................................. 15
Chen, Z. (FA-03) .................................. 97
Chen, Z. (FC-05) .................................. 95
Chen, Z. (IP-09) .................................. 141
Cheng, C. (BW-03) .................................. 48
Cheng, C. (JH-09) .................................. 160
Cheng, H. (CC-03) .................................. 52
Cheng, H. (CF-08) .................................. 59
Cheng, H. (HI-01) .................................. 138
Cheng, J. (CP-12) .................................. 63
Cheng, L. (BE-06) .................................. 75
Cheng, L. (BR-02) .................................. 39
Cheng, L. (BR-07) .................................. 40
Cheng, Q. (IA-08) .................................. 129
Cheng, S. (AQ-02) .................................. 13
Cheng, W. (BC-02) .................................. 24
Cheng, W. (BQ-02) .................................. 37
Cheng, W. (JH-01) .................................. 141
Cheng, X. (AE-12) .................................. 21
Cheng, Y. (FG-15) .................................. 108
Cheng, Z. (BS-06) .................................. 67
Chengkun, S. (HC-10) ............................ 125
Cherif, S. (JR-02) .................................. 143
Cherif, S.M. (IR-01) .................................. 143
Cherkaaski, M. (FD-07) ............................ 103
Chernichenko, A. (IR-17) ........................... 145
Chernov, S. (FH-10) .................................. 70
Chernyslov, D. (DF-06) ............................ 78
Cherubini, G. (IA-09) ............................. 129
Chiba, M. (JR-01) .................................. 168
Chichkov, V. (DP-08) ............................... 81
Chigarev, S. (FP-02) ............................... 110
Chikaski, S. (JG-02) ............................... 159
Childress, J.R. (IB-07) .............................. 130
Childress, J.R. (JR-12) .............................. 147
Chin, A. (AU-10) .................................. 21
Ching, B. (BT-05) .................................. 43
Ching, T. (BV-05) .................................. 47
Chinnasamy, C. (BE-03) ............................ 27
Chinnasamy, K. (JP-02) ............................ 165
Chiriac, H. (IS-03) .................................. 146
Chiriac, H. (IT-07) .................................. 148
Chiriac, H. (JP-03) .................................. 165
Chiriac, H. (JW-08) .................................. 176
Chiriac, H. (JY-04) .................................. 180
Chistyakov, V. (DB-11) ............................ 71
Cho, H. (AQ-07) .................................. 14
Cho, H. (BG-10) .................................. 38
Cho, H. (BR-06) .................................. 40
Cho, H. (BS-01) .................................. 48
Cho, H. (BV-09) .................................. 48
Cho, K. (DC-02) .................................. 72
Cho, Y. (HI-09) .................................. 139
Choi, G. (CP-14) .................................. 63
Choi, H. (DO-06) .................................. 82
Choi, H. (DO-07) .................................. 83
Choi, H. (JH-04) .................................. 167
Choi, H. (JH-17) .................................. 182
Choi, H. (JY-18) .................................. 182
Choi, J. (AP-12) .................................. 13
Choi, J. (AQ-07) .................................. 14
Choi, J. (AU-08) .................................. 20
Choi, J. (BP-05) .................................. 38
Choi, J. (BQ-06) .................................. 38
Choi, J. (BP-04) .................................. 71
Choi, J. (BQ-10) .................................. 38
Choi, J. (BR-06) .................................. 40
Choi, J. (BS-01) .................................. 41
Choi, J. (BS-02) .................................. 41
Choi, J. (BS-04) .................................. 42
Choi, J. (BS-07) .................................. 42
Choi, J. (BV-07) .................................. 48
Choi, J. (BV-09) .................................. 48

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Couet, S. (JD-07)</th>
<th>154</th>
</tr>
</thead>
<tbody>
<tr>
<td>Couet, S. (GD-09)</td>
<td>118</td>
</tr>
<tr>
<td>Cowburn, R. (JL-05)</td>
<td>164</td>
</tr>
<tr>
<td>Cramer, J. (FD-03)</td>
<td>103</td>
</tr>
<tr>
<td>Crespo, H. (FC-07)</td>
<td>101</td>
</tr>
<tr>
<td>Crespo, H. (JP-08)</td>
<td>103</td>
</tr>
<tr>
<td>Cros, V. (CC-08)</td>
<td>53</td>
</tr>
<tr>
<td>Cros, V. (CC-11)</td>
<td>53</td>
</tr>
<tr>
<td>Cros, V. (DD-10)</td>
<td>75</td>
</tr>
<tr>
<td>Cros, V. (EB-02)</td>
<td>85</td>
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<td>Cros, V. (HC-02)</td>
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<td>124</td>
</tr>
<tr>
<td>Cros, V. (JA-12)</td>
<td>150</td>
</tr>
<tr>
<td>Crotti, D. (CF-12)</td>
<td>59</td>
</tr>
<tr>
<td>Crotti, D. (CG-13)</td>
<td>61</td>
</tr>
<tr>
<td>Csaba, G. (EE-06)</td>
<td>92</td>
</tr>
<tr>
<td>Cubukcu, M. (DC-09)</td>
<td>73</td>
</tr>
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<td>Cubukcu, M. (HC-06)</td>
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<td>Cui, C. (GB-02)</td>
<td>114</td>
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<td>30</td>
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<td>Cussac, S. (AC-06)</td>
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<tr>
<td>Cutugno, F. (FD-02)</td>
<td>102</td>
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<tr>
<td>Czettli, C. (AD-04)</td>
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</tr>
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<td>美女学生报告最佳奖候选人*</td>
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<td>Cutugno, F. (FD-02)</td>
<td>102</td>
</tr>
<tr>
<td>Czettli, C. (AD-04)</td>
<td>9</td>
</tr>
<tr>
<td>*Best student presentation award finalist</td>
<td></td>
</tr>
</tbody>
</table>
Evans, R.F. (JW-10) 177
Everaert, K. (AC-08) 6
Esvitigneeva, S. (JI-03) 180
Exl, L. (GC-06) 116
Ezawa, M. (HD-07) 126

- F -
Fabbricci, S. (JH-09) 157
Fabián, J. (DC-13) 73
Facio, J. (JX-06) 179
Fagian, P. (AD-09) 9
Fan, D. (AQ-12) 14
Fan, D. (BB-01) 23
Fan, W. (BP-08) 36
Fan, X. (BJ-06) 33
Fan, X. (FH-09) 109
Fan, Y. (BG-13) 30
Fan, Z. (JH-04) 176
Fang, C. (CB-01) 51
Fang, C. (CP-07) 62
Fang, C. (CP-11) 63
Fang, C. (FB-12) 100
Fang, C. (GP-02) 119
Fang, D. (AS-11) 18
Fang, S. (BT-03) 43
Fang, X. (QJ-03) 167
Fang, Y. (BL-06) 32
Fang, Y. (BU-13) 46
Fang, Y. (BU-15) 32
Fangohr, H. (DD-04) 74
Fangohr, H. (GC-05) 116
Faria Junior, P.E. (DC-13) 73
Fariborzi, H. (GB-06) 114
Farle, M. (FB-02) 98
Farle, M. (FD-07) 103
Fassatoui, A. (GB-05) 136
Fassatoui, A. (HB-07) 122
Fassatoui, A. (HB-08) 122
Fassatoui, A. (HD-04) 118
Fauvel, F. (IB-02) 130
Favaro, F. (AB-11) 5
Fecher, G. (IA-11) 129
Fecova, L. (JR-08) 169
Fiedchenkó, O. (FH-13) 110
Felser, C. (CA-05) 51
Felser, C. (DC-06) 72
Felser, C. (HP-02) 127
Felser, C. (IA-11) 129
Felton, S. (AE-06) 10
Felton, S. (DG-10) 80
Feng, J. (CC-05) 53
Feng, J. (CD-05) 53
Feng, L. (JD-08) 155
Feng, S. (BU-10) 46
Feng, X. (BS-10) 42
Feng, Y. (AB-09) 5
Feng, Y. (AP-07) 12
Feng, Y. (AQ-01) 13
Feng, Z. (AS-01) 17
Fermin, C. (BH-04) 130
Fernández Cuñado, J.L. (IG-11) 137
Fernández González, C. (DD-07) 75
Fernández González, C. (JD-11) 155
Fernandez Scariot, A. (GA-05) 113
Fernández-Pacheco, A. (JH-01) 163
Fernández-Pacheco, A. (JH-05) 164
Fernández-Roldán, J. (JH-04) 136
Fernández-Roldán, J. (JH-12) 161
Fernández-M.A. (HD-03) 161
Ferrara, E. (JH-11) 151
Ferreira, A.H. (ER-05) 96
Ferreira, R. (DD-09) 75
Ferreira, R. (ER-08) 96
Ferreira, R. (ID-08) 133
Ferrer, S. (CQ-08) 64
Ferrando, A. (DQ-02) 82
Fert, A. (CB-05) 52
Fert, A. (CC-08) 53
Fert, A. (CC-11) 53
Fert, A. (DB-02) 70
Fert, A. (HC-02) 124
Feissov, L.Y. (AU-01) 20
Feissov, Y.K. (AU-01) 20
Fiebig, M. (CE-04) 56
Fil'chenkov, I. (EQ-04) 94
Filiáinna, M. (FG-06) 106
Filipe Horlo Belo da Silva, J. (DB-01) 70
Fillion, C. (OM-07) 112
Fillion, C. (HP-04) 127
Finazzi, M. (CB-05) 52
Finco, A. (AB-11) 5
Finizio, S. (AA-03) 3
Finizio, S. (DD-05) 74
Finizio, S. (ED-05) 89
Finizio, S. (HA-01) 120
Finizio, S. (JI-01) 163
Finkel, P. (DF-04) 77
Finkel, P. (IB-03) 130
Finkel, P. (JH-05) 158
Finkel, P. (JH-13) 159
Finocchio, G. (FD-02) 102
Finocchio, G. (FG-06) 106
Finocchio, G. (HA-03) 120
Finocchio, G. (HC-01) 121
Fiorillo, F. (JB-11) 151
Fischbacher, J. (AD-04) 9
Fischer, H. (ID-01) 132
Fischer, J. (AB-11) 5
Fisher, E. (GC-08) 117
Fix, M. (MA-05) 98
Flagslman, L. (ED-05) 89
Flament, S. (JY-05) 130
Flato, A. (YB-06) 3
Flores Filho, A.F. (BF-08) 28
Flores Filho, A.F. (BG-14) 30
Flores Filho, A.F. (BG-15) 30
Flores-Zúñiga, H. (JT-01) 172
Finidiki, A. (JF-11) 159
Foerster, M. (DD-07) 75
Foerster, M. (FH-06) 109
Foerster, M. (GA-02) 113
Foerster, M. (GB-03) 114
Foerster, M. (HD-04) 126
Foerster, M. (JH-12) 139
Foerster, M. (JI-02) 163
Fontana, E. (JH-12) 82
Forestier, G. (FH-02) 108
Forment-Aliaga, A. (DB-03) 70
Förster, J. (ED-05) 89
Fortin, J. (IB-12) 152
Fourn, P. (EC-12) 88
Fraile Rodríguez, A. (IG-01) 136
Fraile Rodríguez, A. (JH-07) 162
Fraile Rodríguez, A. (JH-08) 162
Fraile Rodríguez, A. (JH-12) 163
Francis, F. (DP-02) 81
Franco, V. (DP-01) 80
Franco, V. (JE-01) 155
Franco, V. (JH-07) 156
Franco, V. (JH-08) 157
Franco, V. (JE-09) 157
Francoual, S. (AC-11) 7
Franke, K.J. (FE-03) 104
Franklin, J.D. (AB-10) 5
Franklin, J.D. (DC-10) 73
Franzitta, V. (BD-04) 25
Freimuth, F. (PD-03) 103
Freimuth, F. (PD-04) 103
Freimuth, F. (FH-10) 109
Freundl, K. (IR-04) 145

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Reference</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghosh, S. (FD-04)</td>
<td></td>
<td>103</td>
</tr>
<tr>
<td>Ghosh, S. (CB-02)</td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>Ghandour, M. (BD-11)</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>Gerlinger, K. (HB-02)</td>
<td></td>
<td>122</td>
</tr>
<tr>
<td>Gerlach, T. (YB-04)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Gerken, M. (IB-02)</td>
<td></td>
<td>130</td>
</tr>
<tr>
<td>Gerasimova, N. (FD-05)</td>
<td></td>
<td>103</td>
</tr>
<tr>
<td>Gerasimenko, A. (JP-06)</td>
<td></td>
<td>165</td>
</tr>
<tr>
<td>Geprägs, S. (FG-10)</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Geprägs, S. (CE-05)</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>George, J. (JE-05)</td>
<td></td>
<td>156</td>
</tr>
<tr>
<td>Genuzio, F. (IH-11)</td>
<td></td>
<td>139</td>
</tr>
<tr>
<td>Gonzalez-Hernandez, R. (FG-08)</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Gong, Y. (FC-05)</td>
<td></td>
<td>101</td>
</tr>
<tr>
<td>Gong, Y. (BP-14)</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Gonçalves Almeida, B. (JP-05)</td>
<td></td>
<td>165</td>
</tr>
<tr>
<td>Gonçalves Almeida, B. (JE-12)</td>
<td></td>
<td>157</td>
</tr>
<tr>
<td>Gonçalves Almeida, B. (DE-06)</td>
<td></td>
<td>76</td>
</tr>
<tr>
<td>Gompertz, J. (IG-09)</td>
<td></td>
<td>137</td>
</tr>
<tr>
<td>Gomonay, O. (FD-04)</td>
<td></td>
<td>103</td>
</tr>
<tr>
<td>Gómez, J. (FC-04)</td>
<td></td>
<td>101</td>
</tr>
<tr>
<td>Gómez, J. (FB-06)</td>
<td></td>
<td>99</td>
</tr>
<tr>
<td>Gomez, G. (CR-05)</td>
<td></td>
<td>66</td>
</tr>
<tr>
<td>Gomez, C. (FH-02)</td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Gomes Rolo, A. (DB-01)</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Golubeva, E. (IB-02)</td>
<td></td>
<td>130</td>
</tr>
<tr>
<td>Goldys, E. (YA-06)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Goforth, M.E. (JF-08)</td>
<td></td>
<td>158</td>
</tr>
<tr>
<td>Goforth, M.E. (JF-06)</td>
<td></td>
<td>158</td>
</tr>
<tr>
<td>Goennenwein, S.T. (FH-08)</td>
<td></td>
<td>109</td>
</tr>
<tr>
<td>Godinho, J. (AB-04)</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Goennenwein, S.T. (FG-07)</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Gopman, D.B. (IH-05)</td>
<td></td>
<td>138</td>
</tr>
<tr>
<td>Gross, M. (IQ-03)</td>
<td></td>
<td>142</td>
</tr>
<tr>
<td>Grollier, J. (GA-01)</td>
<td></td>
<td>112</td>
</tr>
<tr>
<td>Greer, J.A. (FH-04)</td>
<td></td>
<td>88</td>
</tr>
<tr>
<td>Greer, J.A. (FH-07)</td>
<td></td>
<td>109</td>
</tr>
<tr>
<td>Greve, D.W. (JA-04)</td>
<td></td>
<td>149</td>
</tr>
<tr>
<td>Grezes, C. (CD-11)</td>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Grezes, C. (DC-11)</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>Grezes, C. (FC-02)</td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>Greig, W. (IA-03)</td>
<td></td>
<td>128</td>
</tr>
<tr>
<td>Grigoras, C. (BF-04)</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Gr一字, F. (IH-01)</td>
<td></td>
<td>142</td>
</tr>
<tr>
<td>Gouéré, D. (JA-01)</td>
<td></td>
<td>150</td>
</tr>
<tr>
<td>Gross, M. (GA-03)</td>
<td></td>
<td>113</td>
</tr>
<tr>
<td>Gruszecki, P. (EE-14)</td>
<td></td>
<td>93</td>
</tr>
<tr>
<td>Gruszecki, P. (EE-07)</td>
<td></td>
<td>92</td>
</tr>
<tr>
<td>Gruszecki, P. (EB-07)</td>
<td></td>
<td>86</td>
</tr>
<tr>
<td>Grundl, D. (EB-08)</td>
<td></td>
<td>92</td>
</tr>
<tr>
<td>Grundl, D. (EE-03)</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Grundl, D. (ED-10)</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Gruszczek, P. (EB-07)</td>
<td></td>
<td>86</td>
</tr>
<tr>
<td>Gruszczek, P. (EC-05)</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Gruszczek, P. (EE-07)</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Gruszczek, P. (EE-14)</td>
<td></td>
<td>93</td>
</tr>
<tr>
<td>Gritter, A. (DE-07)</td>
<td></td>
<td>76</td>
</tr>
<tr>
<td>Gritter, A. (FG-07)</td>
<td></td>
<td>106</td>
</tr>
<tr>
<td>Grzybowski, M. (FG-09)</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Gu, C. (CS-05)</td>
<td></td>
<td>67</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Author</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gu, X.</td>
<td>(AU-10) 21</td>
</tr>
<tr>
<td>Gu, X.</td>
<td>(BQ-01) 37</td>
</tr>
<tr>
<td>Guan, W.</td>
<td>(CS-11) 68</td>
</tr>
<tr>
<td>Guang, Y.</td>
<td>(CC-05) 55</td>
</tr>
<tr>
<td>Gu, Y.</td>
<td>(HB-05) 122</td>
</tr>
<tr>
<td>Guanabon, V.</td>
<td>(EP-09) 94</td>
</tr>
<tr>
<td>Gubbotti, G.</td>
<td>(EE-10) 92</td>
</tr>
<tr>
<td>Gückelhorn, J.</td>
<td>(FG-05) 56</td>
</tr>
<tr>
<td>Guckelhorn, J.</td>
<td>(FG-10) 107</td>
</tr>
<tr>
<td>Gu, X.</td>
<td>(BQ-01) 37</td>
</tr>
<tr>
<td>Guo, J.</td>
<td>(HP-03) 127</td>
</tr>
<tr>
<td>Guo, J.</td>
<td>(DG-09) 80</td>
</tr>
<tr>
<td>Guo, J.</td>
<td>(BC-03) 24</td>
</tr>
<tr>
<td>Guo, C.</td>
<td>(EP-06) 94</td>
</tr>
<tr>
<td>Guo, C.</td>
<td>(ED-12) 90</td>
</tr>
<tr>
<td>Guo, C.</td>
<td>(CP-11) 63</td>
</tr>
<tr>
<td>Guo, B.</td>
<td>(BP-17) 37</td>
</tr>
<tr>
<td>Gümmerov, A.</td>
<td>(CS-02) 67</td>
</tr>
<tr>
<td>Guller, A.</td>
<td>(YA-06) 2</td>
</tr>
<tr>
<td>Gulec, M.</td>
<td>(BH-06) 31</td>
</tr>
<tr>
<td>Guizar-Sicarios, M.</td>
<td>(AA-03) 3</td>
</tr>
<tr>
<td>Guin, S.</td>
<td>(DC-06) 72</td>
</tr>
<tr>
<td>Guillemard, C.</td>
<td>(DE-03) 76</td>
</tr>
<tr>
<td>Guillemard, C.</td>
<td>(DE-01) 75</td>
</tr>
<tr>
<td>Guillemard, C.</td>
<td>(DD-10) 75</td>
</tr>
<tr>
<td>Gui, Y.</td>
<td>(EC-01) 87</td>
</tr>
<tr>
<td>Guerrero, R.</td>
<td>(IR-16) 145</td>
</tr>
<tr>
<td>Guerrero, R.</td>
<td>(IH-14) 139</td>
</tr>
<tr>
<td>Guerrero, R.</td>
<td>(IR-09) 144</td>
</tr>
<tr>
<td>Guerrero, R.</td>
<td>(DP-01) 80</td>
</tr>
<tr>
<td>Gu, Z.</td>
<td>(IH-01) 138</td>
</tr>
<tr>
<td>Gupta, A.</td>
<td>(DP-01) 80</td>
</tr>
<tr>
<td>Gupta, A.</td>
<td>(IG-12) 137</td>
</tr>
<tr>
<td>Gupta, A.</td>
<td>(IH-07) 138</td>
</tr>
<tr>
<td>Gupta, A.</td>
<td>(IR-09) 144</td>
</tr>
<tr>
<td>Gupta, M.</td>
<td>(CG-13) 61</td>
</tr>
<tr>
<td>Gupta, S.</td>
<td>(IR-09) 144</td>
</tr>
<tr>
<td>Gupta, S.</td>
<td>(JE-06) 156</td>
</tr>
<tr>
<td>Gurleyen, H.</td>
<td>(BF-09) 28</td>
</tr>
<tr>
<td>Gusakov, D.</td>
<td>(CD-13) 56</td>
</tr>
<tr>
<td>Gusakov, D.</td>
<td>(DD-05) 74</td>
</tr>
<tr>
<td>Gusakov, D.</td>
<td>(DD-06) 74</td>
</tr>
<tr>
<td>Gusakov, D.</td>
<td>(DD-07) 75</td>
</tr>
<tr>
<td>Gusakov, D.</td>
<td>(DD-08) 75</td>
</tr>
<tr>
<td>Gusakov, D.</td>
<td>(DG-02) 117</td>
</tr>
<tr>
<td>Gushi, T.</td>
<td>(CB-02) 51</td>
</tr>
<tr>
<td>Gushi, T.</td>
<td>(IP-10) 141</td>
</tr>
<tr>
<td>Gushlenko, K.</td>
<td>(EB-07) 86</td>
</tr>
<tr>
<td>Gushlenko, K.</td>
<td>(IG-04) 136</td>
</tr>
<tr>
<td>Gutleisch, O.</td>
<td>(CR-05) 66</td>
</tr>
<tr>
<td>Gutleisch, O.</td>
<td>(JC-02) 152</td>
</tr>
<tr>
<td>Gutleisch, O.</td>
<td>(JG-05) 153</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist

_H_

Hadimani, R.L. (AC-16) 7
Hadimani, R.L. (CQ-10) 65
Hadimani, R.L. (CQ-06) 156
Hadimani, R.L. (QO-06) 167
Hadiyanayis, G., (JC-06) 153
Hadjout, L. (AQ-08) 14
Haecherle, W. (IA-09) 129
Haettel, R. (JC-04) 152
Hageman, T. (AC-10) 7
Hai, N. (IP-09) 141
Hai, P.N. (CD-09) 154
Haidar, M. (FB-08) 99
Haldar, A. (ED-01) 88
Haldar, A. (FB-04) 98
Haldar, A. (FP-10) 111
Haldar, A. (HP-05) 127
Hall, A.J. (IU-11) 175
Halla, A. (CB-05) 51
Halla, A. (CF-04) 52
Halla, A. (IP-10) 141
Haltz, E. (AE-10) 11
Haltz, E. (AE-11) 11
Haltz, E. (FH-06) 109
Haltz, E. (HD-08) 126
Hamada, S. (JP-07) 166
Hamidi, S. (JR-07) 157
Hamrle, J. (JF-02) 138
Hamzbahmai, H. (BJ-09) 34
Hamzbahmai, H. (CI-01) 68
Han, G. (BQ-14) 39
Han, H. (DC-02) 72
Han, H. (HA-05) 121
Han, J. (BG-10) 30
Han, J. (JW-09) 75
Han, J. (JY-13) 181
Han, W. (AS-02) 17
Han, W. (AU-03) 20
Han, W. (HA-05) 121
Han, X. (CB-01) 51
Han, X. (CC-05) 53
Han, X. (CG-10) 60
Han, X. (CP-07) 75
Han, X. (CP-11) 63
Han, X. (DB-05) 70
Han, X. (ED-12) 90
Han, X. (EP-05) 93
Han, X. (EP-06) 94
Han, X. (FP-09) 111
Han, X. (GP-02) 119
Han, X. (HB-05) 178
Han, X. (IQ-06) 142
Han, Y. (IR-07) 144
Hany, Y. (BI-02) 32
Hany, Y. (BI-03) 32
Hanke, J. (FH-10) 109
Hamtali, I. (BP-15) 37
Harakan, K. (BB-07) 23
Haraus, P. (DQ-04) 82

*Best student presentation award finalist*
Habig, J. (JC-02) .......................... 192
Harris, J. (IX-10) .......................... 179
Harris, V. (JP-02) .......................... 165
Hartmann, U. (ER-11) ..................... 97
Hartnett, T. (JE-03) ....................... 156
Harvey, T. (IF-02) ......................... 125
Hasan, M. (FE-06) ......................... 104
Hasegawa, S. (HC-03) ..................... 124
Hashi, S. (FB-09) .......................... 99
Hashi, S. (JY-05) .......................... 181
Haspin, V. (ED-02) ......................... 89
Hassan, S. (IG-09) .......................... 137
Hatley, T. (IE-05) .......................... 159
Haut, T. (JD-01) ............................ 132
Hauet, J. (FD-03) .......................... 158
Haupt, J. (AD-02) ......................... 8
Hawacker, J. (FB-01) ...................... 98
Hayakawa, K. (FC-09) .................... 102
Hayakawa, K. (GB-10) .................... 115
Hayashi, M. (HC-03) ...................... 124
Hayak, A. (AB-11) .......................... 5
Hayward, T. (GA-02) ...................... 117
Hayward, T. (GB-03) ...................... 114
Hayward, T. (GB-09) ...................... 115
Hayward, T. (GB-11) ...................... 115
He, C. (CC-05) ............................. 53
He, K. (CP-12) .............................. 63
He, L. (FP-02) .............................. 101
He, L. (JP-01) .............................. 143
He, P. (IF-01) .............................. 135
He, Y. (IA-11) .............................. 129
He, Z. (JB-10) .............................. 151
He, Z. (JQ-03) .............................. 167
He, Z. (JQ-05) .............................. 178
Hecqmet, M. (AP-06) ...................... 12
Hequen, M. (BB-01) ....................... 11
Hedrich, N. (DF-01) ....................... 77
Helmholtz, M. (BD-01) ................... 102
Helmholtz, M. (BA-01) ................... 112
Helmholtz, M. (BH-01) ................... 121
Helmholtz, M. (ID-01) ................... 132
Heinrich, M. (BD-11) ..................... 90
Heinzel, B. (EE-04) ....................... 91
Heistreich, P.T. (HA-03) .................. 120
Hellwig, O. (JB-09) ....................... 151
Henderick, L. (DF-02) .................... 77
Hendren, W. (FC-08) ..................... 101
Hendren, W. (IQ-09) ...................... 142
Hennel, M. (JT-04) ....................... 173
Hennel, M. (ID-01) ....................... 132
Hennel, M. (ID-05) ....................... 90
Hennel, M. (IB-11) ....................... 31
Henry, Y. (EB-03) .......................... 85
Hensel, M. (JC-02) ....................... 168
Hee, C. (IS-13) ............................ 147
Heo, C. (IT-02) ............................ 147
Heo, C. (IT-05) ............................ 148
Heree, D. (JP-03) .......................... 165
Herme, F. (EP-02) ......................... 117
Herme, M. (AC-12) ....................... 7
Hermosa, J. (CQ-08) ..................... 64
Hernandez, S. (IA-10) .................... 129
Hernando, A. (JH-10) ................... 162
Herpet, H.C. (JQ-02) ..................... 154
Herr, U. (JL-08) ............................ 164
Herranz, F. (JQ-05) ........................ 160
Herrmann, F. (CA-01) .................... 12
Herrera Diez, L. (HC-06) ............... 124
Herrera Huerta, G.A. (JI-11) .......... 164
Hertel, R. (AE-04) ......................... 10
Heuax, S. (ID-01) .......................... 132
Heuwett, S. (FB-13) ...................... 100
Heya, A. (BD-02) ......................... 25
Heya, A. (BD-09) .......................... 26
Heyderman, L. (AA-03) ................. 3
Heyderman, L. (ED-05) .................. 89
Hibino, Y. (CD-10) ....................... 55
Hicken, R.J. (CB-03) ..................... 51
Hickey, B. (DP-09) ....................... 81
Hierro Rodriguez, A. (CQ-08) ........ 64
Hierro Rodriguez, A. (BD-05) ........ 75
Hierro Rodriguez, A. (JY-05) ....... 164
Higashida, R. (JS-04) .................... 171
Higgs, Z. (JQ-02) ......................... 167
Hight Walker, A.R. (AC-13) ............ 7
Higo, T. (FH-05) .......................... 108
Higuchi, M. (CQ-01) ..................... 64
Hikishima, M. (ID-06) ................... 133
Hillebrands, B. (BD-02) ............... 50
Hillebrands, B. (EB-08) ............... 86
Hillebrands, B. (ED-11) ............... 90
Hirakawa, K. (JL-11) .................... 174
Hirata, K. (BB-06) ....................... 23
Hirata, K. (BD-02) ....................... 24
Hirata, K. (BD-08) ....................... 26
Hirata, K. (BD-09) ....................... 25
Hirata, K. (BD-02) ....................... 35
Hirata, Y. (CP-04) ....................... 62
Hirayama, Y. (JW-03) ................... 176
Hirayama, Y. (JW-11) ................... 177
Hiremath, B. (CP-05) ................... 125
Hirose, T. (CP-02) ....................... 51
Hirose, T. (DG-07) ....................... 80
Hirose, T. (IP-10) ....................... 141
Hirota, R. (BD-13) ....................... 134
Hirschmann, E. (IA-03) ............... 128
Hisayoshi, K. (CR-04) ................... 65
Hisayoshi, K. (CR-06) ................... 66
Hlenschi, C. (IS-03) .................... 146
Hlenschi, C. (JY-04) .................... 180
Hlenschi, S. (BA-06) .................... 22
Ho, P. (HC-04) ............................ 124
Ho, P. (HD-06) ............................ 126
Ho, S. (BU-03) ............................ 45
Ho, S. (BU-04) ............................ 45
Ho, S. (BU-05) ............................ 45
Ho, S. (IH-09) ............................ 139
Hoefer, M. (CE-07) ...................... 57
Hoffmann, A. (AE-12) ................... 11
Hoffmann, M. (AE-09) ................. 149
Hohler, M. (BD-07) ...................... 149
Hoiberg, T. (JD-01) ..................... 102
Hohler, T. (HB-01) ....................... 121
Holanda, J. (FB-07) ..................... 99
Holler, M. (AA-03) ....................... 3
Holmes, S. (J0-05) ....................... 164
Honecker, D. (JL-09) ................... 164
Hong, Y. (JD-07) ......................... 154
Honjo, H. (CF-03) ....................... 58
Honjo, H. (CF-05) ....................... 58
Honkura, S. (IB-11) ..................... 131
Honkura, S. (ID-06) ..................... 133
Honkura, Y. (IB-11) ..................... 131
Honkura, Y. (ID-06) ..................... 133
Honma, S. (AE-03) ....................... 76
Hono, K. (DE-05) ......................... 76
Hono, K. (EG-04) ......................... 134
Hono, K. (JY-05) ......................... 153
Horino, T. (IS-15) ....................... 147
Horng, L. (IP-09) ....................... 141
Horng, L. (IP-12) ....................... 141
Ho, J. (BV-04) ............................ 47
Ho, M. (BC-05) ............................ 24

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hou, Z.</td>
<td>BD-07</td>
<td>126</td>
</tr>
<tr>
<td>Houshmand Sharifi, S. (CF-12)</td>
<td></td>
<td>59</td>
</tr>
<tr>
<td>Houzet, M. (FH-02)</td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Howard, J. (JH-01)</td>
<td></td>
<td>161</td>
</tr>
<tr>
<td>Hrabec, A. (AA-03)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Hrabec, A. (ED-05)</td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>Hrakova, D. (IB-06)</td>
<td></td>
<td>130</td>
</tr>
<tr>
<td>Hsiao, Y. (CC-02)</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Hsieh, M. (BP-08)</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Hsu, C. (EC-01)</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Hsu, C. (CC-04)</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Hsu, C. (CG-04)</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Hsu, C. (AU-14)</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Hsu, C. (BR-10)</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Hsu, C. (AU-03)</td>
<td></td>
<td>39</td>
</tr>
<tr>
<td>Hsu, C. (BP-16)</td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>Hsu, C. (AP-07)</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Hsu, C. (DH-02)</td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Hsu, Z. (HD-07)</td>
<td></td>
<td>126</td>
</tr>
<tr>
<td>Huebl, H. (CE-05)</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>Huebl, H. (FG-10)</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Huebl, H. (CE-07)</td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>Huebl, H. (BG-02)</td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Huebl, H. (BP-07)</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Huebl, H. (BP-01)</td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Huebl, H. (BP-03)</td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>Huebl, H. (BG-03)</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>Huang, Y. (JU-12)</td>
<td></td>
<td>175</td>
</tr>
<tr>
<td>Huang, W. (JU-08)</td>
<td></td>
<td>175</td>
</tr>
<tr>
<td>Huang, W. (BR-09)</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Huang, L. (CG-08)</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Huang, L. (BV-02)</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>Huang, J. (BU-02)</td>
<td></td>
<td>44</td>
</tr>
<tr>
<td>Huang, J. (BY-09)</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>Huang, Z. (AU-03)</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Huang, C. (BP-14)</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Huang, D. (BG-09)</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>Huang, D. (IB-08)</td>
<td></td>
<td>125</td>
</tr>
<tr>
<td>Huang, D. (JH-05)</td>
<td></td>
<td>138</td>
</tr>
<tr>
<td>Huang, G. (BV-08)</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Huang, B. (BP-01)</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>Huang, H. (BU-01)</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Huang, H. (BF-09)</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Huang, H. (IS-14)</td>
<td></td>
<td>147</td>
</tr>
<tr>
<td>Huang, J. (BG-10)</td>
<td></td>
<td>130</td>
</tr>
<tr>
<td>Huang, J. (BU-16)</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>Huang, J. (BU-17)</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>Huang, J. (BP-17)</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Huang, L. (BP-02)</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Huang, S. (CG-09)</td>
<td></td>
<td>119</td>
</tr>
<tr>
<td>Huang, M. (AB-05)</td>
<td></td>
<td>114</td>
</tr>
<tr>
<td>Huang, M. (FE-05)</td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>Huang, M. (FE-06)</td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>Huang, M. (IA-04)</td>
<td></td>
<td>129</td>
</tr>
<tr>
<td>Huang, P. (AR-03)</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Huang, P. (BU-07)</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Huang, R. (BG-03)</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>Huang, R. (BU-02)</td>
<td></td>
<td>45</td>
</tr>
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<td>Huang, R. (BP-01)</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Huang, S. (AQ-01)</td>
<td></td>
<td>13</td>
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<tr>
<td>Huang, S. (BP-16)</td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>Huang, S. (BQ-16)</td>
<td></td>
<td>39</td>
</tr>
<tr>
<td>Huang, S. (BR-01)</td>
<td></td>
<td>39</td>
</tr>
<tr>
<td>Huang, S. (BR-09)</td>
<td></td>
<td>40</td>
</tr>
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<td>Huang, S. (BR-11)</td>
<td></td>
<td>40</td>
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<td></td>
<td>40</td>
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<tr>
<td>Huang, W. (JU-01)</td>
<td></td>
<td>174</td>
</tr>
<tr>
<td>Huang, W. (JU-07)</td>
<td></td>
<td>175</td>
</tr>
<tr>
<td>Huang, W. (JU-08)</td>
<td></td>
<td>175</td>
</tr>
<tr>
<td>Huang, Y. (JU-12)</td>
<td></td>
<td>175</td>
</tr>
<tr>
<td>Hucl, H. (CA-05)</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>Hucl, H. (FG-10)</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Hucl, H. (CC-01)</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Hucl, H. (CE-04)</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>Hug, H. (JH-09)</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Hug, H. (JH-03)</td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Hug, H. (JH-02)</td>
<td></td>
<td>129</td>
</tr>
<tr>
<td>Hughes, B. (CF-01)</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Hui, Y. (CP-02)</td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>Hui, Y. (CP-08)</td>
<td></td>
<td>62</td>
</tr>
<tr>
<td>Hui, Y. (HP-06)</td>
<td></td>
<td>127</td>
</tr>
<tr>
<td>Hui, Y. (IQ-04)</td>
<td></td>
<td>142</td>
</tr>
<tr>
<td>Hui, Y. (IS-16)</td>
<td></td>
<td>147</td>
</tr>
<tr>
<td>Hui, Y. (JY-07)</td>
<td></td>
<td>181</td>
</tr>
<tr>
<td>Hurdequint, H. (EA-04)</td>
<td></td>
<td>84</td>
</tr>
<tr>
<td>Hurdequint, H. (EB-02)</td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>Hurdequint, H. (HP-06)</td>
<td></td>
<td>111</td>
</tr>
<tr>
<td>Hurst, J. (DD-05)</td>
<td></td>
<td>74</td>
</tr>
<tr>
<td>Hurst, J. (DD-06)</td>
<td></td>
<td>74</td>
</tr>
<tr>
<td>Hurst, J. (DD-07)</td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>Hurst, J. (DD-08)</td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>Hutanu, V. (AC-17)</td>
<td></td>
<td>117</td>
</tr>
<tr>
<td>Hutanu, V. (DF-06)</td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>Hutanu, V. (DF-09)</td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>Hutanu, V. (DG-04)</td>
<td></td>
<td>79</td>
</tr>
<tr>
<td>Hutanu, V. (JT-10)</td>
<td></td>
<td>173</td>
</tr>
<tr>
<td>Hutanu, V. (JG-12)</td>
<td></td>
<td>161</td>
</tr>
<tr>
<td>Hutanu, V. (BS-11)</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Hutanu, V. (BS-12)</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Hutanu, V. (CP-09)</td>
<td></td>
<td>62</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist
Khan, B. (BG-06) .................................................. 29
Khan, F. (BB-02) ................................................. 23
Khan, F. (BD-07) ................................................. 25
Khan, F. (BG-06) ................................................. 29
Khan, S. (DC-09) ................................................ 73
Khandani, M.Y. (CU-14) ................................. 54
Kharlambova, A. (ER-09) ............................... 96
Khititwirachayakul, S. (JP-05) ...................... 140
Khodadadi, M. (DF-12) .................................. 79
Kho, K. (HC-04) .................................................. 124
Khurana, B. (CE-08) ......................................... 57
Kiarie, W.M. (JU-09) ....................................... 175
Kiammen, M. (JU-10) ....................................... 175
Kichin, G. (ER-08) .............................................. 86
Kiecimle, M. (ER-06) ......................................... 92
Kief, M.T. (IA-10) ............................................ 129
Kierrean, B. (JF-03) .......................................... 158
Kikuchi, E. (BD-06) .......................................... 133
Kim, C. (AR-07) ................................................ 15
Kim, C. (BQ-06) ............................................... 39
Kim, C. (BQ-15) ............................................... 39
Kim, C. (BS-01) ............................................... 41
Kim, C. (BS-07) ............................................... 41
Kim, C. (BV-07) ............................................... 48
Kim, C. (DQ-06) ............................................... 82
Kim, C. (DQ-07) ............................................... 83
Kim, D. (AS-05) ............................................... 17
Kim, D. (BP-11) ............................................... 36
Kim, D. (BQ-01) ............................................... 37
Kim, D. (BD-12) ............................................... 39
Kim, D. (EP-04) ............................................... 93
Kim, D. (IS-02) ............................................... 145
Kim, D. (IS-13) ............................................... 147
Kim, H. (AR-10) ............................................... 16
Kim, H. (AR-15) ............................................... 16
Kim, H. (AR-16) ............................................... 16
Kim, H. (BD-12) ............................................... 16
Kim, H. (BR-13) ............................................... 40
Kim, H. (BR-14) ............................................... 41
Kim, H. (BW-12) ............................................... 49
Kim, H. (JQ-04) ............................................... 167
Kim, J. (AC-05) ................................................ 6
Kim, J. (AV-03) ................................................ 21
Kim, J. (BG-05) ............................................... 29
Kim, J. (BD-10) ............................................... 75
Kim, J. (DP-03) ............................................... 81
Kim, J. (DP-05) ............................................... 81
Kim, J. (GC-01) ............................................... 116
Kim, J. (GC-02) ............................................... 116
Kim, J. (HA-06) ............................................... 121
Kim, J. (HC-09) ............................................... 125
Kim, J. (JW-05) ............................................... 176
Kim, J. (JW-16) ............................................... 177
Kim, J. (JY-09) ............................................... 181
Kim, K. (AC-05) ............................................... 6
Kim, K. (BG-05) ............................................... 29
Kim, K. (BR-16) ............................................... 41
Kim, K. (CB-06) ............................................... 52
Kim, K. (CP-04) ............................................... 62
Kim, K. (IQ-07) ............................................... 62
Kim, M. (BJ-07) ............................................... 34
Kim, M. (IS-02) ............................................... 145
Kim, M. (IS-13) ............................................... 147
Kim, S. (BR-04) ............................................... 39
Kim, S. (BR-14) ............................................... 41
Kim, S. (CP-04) ............................................... 62
Kim, S. (CP-14) ............................................... 63
Kim, S. (IQ-07) ............................................... 62
Kim, S. (EP-04) ............................................... 93
Kim, S. (FP-12) ............................................... 112
Kim, S. (JD-07) ............................................... 154
Kim, T. (CG-12) ............................................... 61
Kim, T. (JY-18) ............................................... 182
Kim, W. (AR-18) ............................................... 16
Kim, W. (BR-04) ............................................... 39
Kim, W. (BR-12) ............................................... 40
Kim, W. (BR-13) ............................................... 40
Kim, W. (BR-15) ............................................... 41
Kim, W. (BR-16) ............................................... 41
Kim, W. (BR-17) ............................................... 41
Kim, W. (BS-01) ............................................... 41
Kim, W. (CP-12) ............................................... 49
Kim, W. (CG-13) ............................................... 61
Kim, Y. (AR-10) ............................................... 16
Kim, Y. (AS-08) ............................................... 17
Kim, Y. (BU-08) ............................................... 46
Kim, Y. (BW-15) ............................................... 50
Kimel, A. (FA-06) ........................................... 98
Kimel, A. (FB-11) ........................................... 99
Kimura, S. (CE-05) ......................................... 105
Kimura, T. (CE-10) ......................................... 57
Kimura, T. (CP-13) ......................................... 63
Kini, C. (IA-03) ............................................... 128
Kindiai, I. (ER-08) ......................................... 96
Kipp, J. (FH-10) ............................................ 109
Kirchhof, C. (BD-02) ..................................... 130
Kirlyuka, A. (JF-14) ....................................... 169
Kirino, F. (JD-05) ......................................... 154
Kirste, G. (JF-14) ........................................... 177
Kiryukhin, V. (DP-03) ................................ 81
Kishi, Y. (CG-11) ............................................. 61
Kishine, J. (EQ-08) ......................................... 95
Kisic, M.G. (IS-12) ......................................... 146
Kitamura, T. (JP-13) ....................................... 166
Kitayama, F. (BD-06) ..................................... 25
Kitayama, Y. .................................................. 103
Kitazawa, H. (JT-08) ..................................... 173
Kitcher, M.D. (HD-09) ................................. 127
Kitcher, M.D. (IG-03) ................................... 136
Kladas, A.G. (AP-13) ...................................... 13
Klau, M. (CG-09) ............................................ 60
Klau, M. (FD-03) ............................................ 103
Klau, M. (FG-04) ............................................ 106
Klau, M. (FG-05) ............................................ 106
Klau, M. (FH-11) ............................................ 109
Klau, M. (FH-12) ............................................ 110
Klau, M. (FH-13) ............................................ 110
Klau, M. (HC-10) ............................................ 125
Klebert, A. (HA-01) ....................................... 120
Klein, O. (EA-04) ............................................ 84
Klein, O. (EB-02) ............................................ 85
Klein, O. (ED-04) ............................................ 89
Klein, O. (EE-08) ............................................ 92
Kliava, J. (JY-19) ............................................ 182
Klingbeil, F. (IT-06) ...................................... 148
Klingbeil, F. (FG-08) ..................................... 160
Klos, J.W. (EC-08) ........................................ 88
Klos, J.W. (EC-07) ........................................ 83
Klose, C. (AB-05) .......................................... 4
Klyukin, K. (FE-05) ....................................... 104
Kmita, A. (AC-14) .......................................... 7
Knauer, S. (ED-11) ........................................... 90
Knight, E. (JQ-06) ......................................... 167
Kobashi, M. (JW-03) ..................................... 176
Kobayashi, K. (CF-05) ................................... 64
Kobayashi, K. (CR-01) ................................... 95
Kobayashi, K. (CF-09) ................................... 102
Kobayashi, S. (JR-01) ................................... 168
Kobe, S. (JC-11) ............................................. 153
Koda, T. (EE-05) ............................................ 91
Koda, T. (BF-09) ............................................ 99
Kodarna, K. (JP-07) .................................... 166
Kob, C. (AD-07) .............................................. 9
Koh, C. (AC-18) .............................................. 9
Köhler, L. (HB-10) .......................................... 123
Kohno, R. (EA-04) .......................................... 84
Kohno, R. (ED-04) .......................................... 89
Koike, T. (IA-09) ........................................... 129
Koike, Y. (ED-06) ........................................... 89
Koike, Y. (ED-13) .......................................... 90
Kojima, F. (IS-06) .......................................... 146
Koki, K. (EP-01) .............................................. 93

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Author</th>
<th>Reference</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liu, Z. (IB-09)</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>Liu, Z. (IB-12)</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>Liu, Z. (JY-13)</td>
<td>181</td>
<td></td>
</tr>
<tr>
<td>Lloyd, D. (CE-03)</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Lo Conte, R. (HB-01)</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Lo, T. (CC-12)</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Lo, Y. (EA-06)</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Locardi, F. (JD-10)</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>Locatelli, A. (HB-08)</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>Locatelli, A. (II-11)</td>
<td>139</td>
<td></td>
</tr>
<tr>
<td>Locatelli, L. (DC-01)</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Lofink, F. (IB-02)</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Lofland, S. (IB-03)</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Lombard, L. (IB-07)</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Lomonova, E. (AD-05)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Lomonova, E. (AS-10)</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Lomonova, E. (BI-04)</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Lone, A.H. (GB-06)</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>Longhino, J.M. (KI-11)</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>Longo, E. (DC-01)</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Longo, E. (DC-12)</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Longo, M. (DC-01)</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Longo, M. (DC-12)</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Lopezandia, A. (AF-02)</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Lopes Reeger, S. (RA-04)</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Lopes Reeger, S. (RB-08)</td>
<td>107</td>
<td></td>
</tr>
<tr>
<td>Lopes Reeger, S. (RF-02)</td>
<td>109</td>
<td></td>
</tr>
<tr>
<td>Lopes, A.L. (DE-06)</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>López-Ortega, A. (JR-11)</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>Lopez-Quintas, I. (FD-03)</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Loss, D. (HC-08)</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Lostun, M. (IT-07)</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Lostin, M. (IT-07)</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Loughran, T. (CB-03)</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Louis, S. (ED-08)</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Louis, S. (ER-06)</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Loureiramb, J. (CG-08)</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Lovell, E. (JT-06)</td>
<td>173</td>
<td></td>
</tr>
<tr>
<td>Loving, M. (CG-05)</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Lu, J. (CC-03)</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Lottini, E. (RF-11)</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>Lu, J. (FE-07)</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Lu, J. (FG-07)</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Lu, Q. (AT-03)</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Lu, Q. (BD-03)</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Lu, Q. (DE-07)</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Lu, Q. (IC-10)</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>Lu, Q. (JQ-05)</td>
<td>167</td>
<td></td>
</tr>
<tr>
<td>Lu, S. (JA-04)</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Lu, X. (EA-06)</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Lu, X. (FC-05)</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>Lu, X. (IQ-10)</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Lu, X. (IR-18)</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Lu, X. (JX-02)</td>
<td>178</td>
<td></td>
</tr>
<tr>
<td>Lu, Y. (AQ-11)</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Lu, Z. (IP-11)</td>
<td>141</td>
<td></td>
</tr>
<tr>
<td>Lubertstetter, W. (AC-17)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Lubin, T. (BA-03)</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Lukbic, A. (AA-04)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Luis Zabotto, F. (JS-10)</td>
<td>172</td>
<td></td>
</tr>
<tr>
<td>Lukovic, M. (IS-12)</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>Lukoyanov, A. (DE-09)</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Lukoyanov, A. (AT-09)</td>
<td>173</td>
<td></td>
</tr>
<tr>
<td>Lu, Z. (JA-03)</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Luo, Y. (JQ-03)</td>
<td>167</td>
<td></td>
</tr>
<tr>
<td>Lupa, N. (IS-03)</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>Lupa, N. (IT-07)</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Lupa, N. (JP-03)</td>
<td>165</td>
<td></td>
</tr>
<tr>
<td>Lupa, N. (JW-08)</td>
<td>176</td>
<td></td>
</tr>
<tr>
<td>Lupa, N. (JT-04)</td>
<td>109</td>
<td></td>
</tr>
<tr>
<td>Lux, F. (FH-10)</td>
<td>109</td>
<td></td>
</tr>
<tr>
<td>Luzanov, V. (FB-03)</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>Lv, B. (JY-15)</td>
<td>182</td>
<td></td>
</tr>
<tr>
<td>Lysek, E. (HB-10)</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>Luyu, S. (BJ-13)</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Lyubchanski, I. (EB-07)</td>
<td>86</td>
<td></td>
</tr>
</tbody>
</table>

*M Best student presentation award finalist*
Nikonov, D.E. (CQ-01) ............. 52
Nikonov, D.E. (DA-04) .......... 69
Nimmonk, C. (JQ-06) .......... 167
Ning, S. (CQ-09) ................ 65
Ning, S. (CR-08) ................. 66
Ning, S. (CS-14) ................. 68
Ning, S. (JP-09) ................. 166
Ning, S. (JP-14) ................. 166
Ning, S. (QO-09) ................. 168
Niraula, G. (JA-13) .............. 150
Nishihara, H. (JC-08) .......... 179
Nishikawa, M. (IP-07) .......... 140
Nishikawa, M. (CM-08) ........ 108
Nishio-Hamane, D. (JW-06) .... 176
Nishioka, K. (CF-03) ............ 58
Nishioka, K. (CF-05) ............ 58
Niu, S. (BJ-13) ................. 34
Niu, S. (BS-03) ................. 41
Niu, S. (BT-07) ................. 44
Niu, S. (BT-10) ................. 44
Niu, S. (BJ-12) ................. 44
Niu, S. (BT-13) ................. 44
Niu, S. (BJ-14) ................. 44
Niu, S. (BU-03) ................. 45
Niu, S. (BU-04) ................. 45
Niu, S. (BU-05) ................. 45
Niu, S. (BU-06) ................. 45
Niu, S. (BU-11) ................. 46
Niu, S. (BU-16) ................. 46
Niu, S. (BU-17) ................. 46
Niu, S. (BU-18) ................. 46
Niu, S. (BU-19) ................. 47
Niu, S. (BV-06) ................. 47
Niu, S. (BW-09) ................. 49
Nibledin, C.J. (JC-01) ........ 152
Nibledin, C.J. (JC-08) ........ 153
Nishiyama, L.C. (JL-10) ....... 175
Noeck, T.B. (EB-08) .......... 86
Noda, M. (DP-04) ............... 81
Noël, P. (CD-11) ................. 55
Noël, P. (DC-11) ................. 73
Noël, P. (FE-02) ................. 104
Nogarede, B. (BJ-08) .......... 34
Noguchi, J. (CF-03) ............ 58
Nogues, J. (DF-02) .............. 77
Noky, J. (DC-06) ................. 72
Nomeddeu, M. (BJ-08) ........ 34
Nomura, A. (JQ-06) ............ 178
Nomura, E. (JR-01) ............. 168
Nomura, H. (GA-03) .......... 113
Normile, P.S. (IH-08) ........... 139
Noro, S. (JD-05) ................. 154
Novak, E. (DJ-06) ............... 153
Novak, V. (AB-04) ............... 4
Novati, A. (JC-12) .............. 153
Novk, A. (AD-12) ............... 153
Novo, A. (DJ-06) ............... 71
Novotny, J. (IB-08) ............. 131
Nozaki, T. (IH-04) .............. 138
Nozaki, T. (GA-03) ............. 114
Nozaki, T. (GD-03) ............. 114
Nozawa, K. (ER-12) ............ 97
Nouah, M. (HC-05) ............. 124
Nozmi, C. (JG-06) .............. 160
Nuss, J. (DP-03) ............... 81
Nutter, P. (FB-13) .............. 100
Ogawa, T. (JP-02) ............... 35
Ogawa, T. (JP-03) ............... 140
Ogawa, T. (JP-04) ............... 140
Ogawa, Y. (JW-06) .............. 176
Ognev, A. (CB-01) .............. 51
Ognev, A. (GP-02) .............. 129
Ogrin, F. (EP-02) ............... 93
Oguz, K. (DA-04) ............... 69
Oh, D. (DP-03) ................. 81
Oh, D. (DP-05) ................. 81
Oh, S. (AR-15) ................. 16
Oh, S. (AR-16) ................. 16
Oh, S. (BJ-15) ................. 41
Oh, S. (BW-12) ................. 49
Oh, S. (EP-04) ................. 93
Oh, S. (FP-12) ................. 112
Ohashi, S. (AT-06) ............ 19
Ohashi, S. (AV-01) .......... 21
Ohashi, S. (BD-05) ............ 25
Ohashi, S. (BS-09) ............ 42
Ohashi, K. (JR-10) .......... 168
Ohkubo, T. (IE-04) ............ 134
Ohldag, H. (FG-15) .......... 108
Ohnishi, K. (CE-10) ............ 57
Ohno, H. (CG-01) .............. 59
Ohno, H. (CG-02) .............. 60
Ohno, H. (PC-09) .............. 102
Ohno, H. (PD-01) .............. 102
Ohno, H. (FG-05) .............. 106
Ohno, H. (GB-10) ............ 115
Ohno, H. (IH-03) .............. 138
Ohodnicki, P. (JA-04) ....... 149
Ohresser, P. (JI-11) .......... 164
Ohtake, M. (JD-05) .......... 154
Okamoto, Y. (IP-07) .......... 140
Okamoto, Y. (IB-08) .......... 140
Okamurana, N. (CQ-04) ..... 64
Okita, K. (ER-12) .............. 97
Okita, K. (JP-13) .............. 166
Okumo, H. (CB-02) .......... 51
Okumo, H. (CB-05) .......... 52
Okumo, H. (IH-10) .......... 141
Olausfaski, O.O. (JO-01) ....... 165
Oliveira, J. (DE-06) ....... 149
Olivero Mata, E. (GD-04) ....... 118
Olivetti, E.S. (JF-11) ....... 159
Olkhovskiy, I. (JQ-07) ....... 168
Omélec, K. (CR-05) .......... 66
Ollerós-Rodríguez, P. (AE-08) ... 10
Ollerós-Rodríguez, P. (DB-09) ... 71
Ollerós-Rodríguez, P. (HB-03) ... 122
Ollerós-Rodríguez, P. (IH-08) ... 158
Ollerós-Rodríguez, P. (IH-14) ... 139
One, R. (IQ-05) ............... 142
Ong, H. (BI-10) ............... 33
Onitua, S. (IS-15) .......... 147
Ono, S. (FE-09) ............... 105
Ono, T. (CP-04) ............... 62
Ono, T. (FB-11) ............... 99
Ono, T. (CQ-05) ............... 99
Ono, M. (BG-04) .............. 29
Oogane, M. (CP-03) .......... 61
Oogane, M. (CP-15) .......... 63
Oogane, M. (IT-03) .......... 147
Ogel, P. (FG-10) ............. 107
Onrikawa, K. (BP-02) .......... 35
Orci, I. (EF-09) ............... 96
Otsuro, H. (HP-07) ....... 145
Oshima, D. (FC-06) ........... 101
Ospiov, A. (ER-13) .......... 97
Osman, R. (JX-10) ........... 179
Ostatnicky, T. (AB-04) ....... 4
Otani, Y. (CP-09) .......... 62
Otani, Y. (EC-03) .......... 87
Otani, Y. (FI-05) .......... 108
Otero, E. (JI-11) ............ 164

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sagasta, E. (CC-01)</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Safin, A. (FB-14)</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Safi Samghabadi, F. (DF-12)</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Safeer, C. (HC-05)</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>Safarpour, R. (BU-09)</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Saeedi Ilkhchy, K. (FB-14)</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Sadovnikov, A.V. (HA-01)</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Sadovnikov, A.V. (EQ-07)</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>Sadovnikov, A.V. (EQ-06)</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>Sadovnikov, A.V. (EP-03)</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Sadovnikov, A.V. (EP-02)</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Sadovnikov, A.V. (EC-04)</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Sadovnikov, A.V. (EB-04)</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Sampaio, J. (AE-10)</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Samoshkina, Y. (IR-17)</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Samoshkina, Y. (DP-08)</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Samardak, A.S. (GP-02)</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Samardak, A.S. (CB-01)</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Samanta, A. (IG-05)</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Samanta, A. (EE-10)</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Salvan, G. (JB-09)</td>
<td>151</td>
<td></td>
</tr>
<tr>
<td>Salvador, M. (YA-05)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Salgan, G. (JB-09)</td>
<td>151</td>
<td></td>
</tr>
<tr>
<td>Samanta, A. (EE-10)</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Samanta, A. (GC-07)</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>Samardak, A.S. (CB-01)</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Samardak, A.S. (GP-02)</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>Sam, I. (JB-05)</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Sam, I. (BG-08)</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Samiepour, M. (CG-06)</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Samoshkina, Y.E. (DP-08)</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Samoshkina, Y.E. (IR-17)</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Sampoio, J. (AE-10)</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Sampoio, J. (HD-08)</td>
<td>126</td>
<td></td>
</tr>
<tr>
<td>Samsonov, K. (CS-02)</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>San Emeterio Alvarez, L. (DD-09)</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Sanchez Hazen, D. (CF-11)</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>Sanchez Llamazares, J.L. (IT-03)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Sanchez-Tejerina, L. (AE-05)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Sanchez-Tejerina, L. (FD-02)</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Sanchez-Tejerina, L. (FG-06)</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Sanchez, C. (JX-04)</td>
<td>178</td>
<td></td>
</tr>
<tr>
<td>Sanchez, E. (HI-08)</td>
<td>139</td>
<td></td>
</tr>
<tr>
<td>Sander, A. (IQ-08)</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>Sangiao, S. (EB-02)</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Sangregorio, C. (JR-11)</td>
<td>172</td>
<td></td>
</tr>
<tr>
<td>Santos, O. (FB-07)</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>Sanc Hernandez, D. (GA-01)</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td>Sanc Hernandez, D. (JI-04)</td>
<td>163</td>
<td></td>
</tr>
<tr>
<td>Sano, T. (JW-02)</td>
<td>176</td>
<td></td>
</tr>
<tr>
<td>Savag, E. (JW-02)</td>
<td>163</td>
<td></td>
</tr>
<tr>
<td>Savary, M. (AC-12)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Savelev, D.V. (AU-01)</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Savero Torres, W. (DA-03)</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Sawa, T. (HI-03)</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>Sayyad, S. (BK-04)</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Sayed, S. (CG-04)</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Sazonov, A. (DF-09)</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Sbria, R. (CE-06)</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Scagnoval, V. (AA-03)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Scaleria, V. (EB-11)</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Scaleria, V. (FD-08)</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Scaleria, V. (GC-04)</td>
<td>116</td>
<td></td>
</tr>
<tr>
<td>Scaleria, V. (GC-10)</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>Schäfer, L. (JC-02)</td>
<td>152</td>
<td></td>
</tr>
<tr>
<td>Schäfer, R. (AB-07)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Schäfer, R. (FE-04)</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Schaffer, S. (GC-06)</td>
<td>116</td>
<td></td>
</tr>
<tr>
<td>Schamlick, A. (DG-04)</td>
<td>111</td>
<td></td>
</tr>
<tr>
<td>Schamlick, A. (GA-01)</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td>Scheibel, F. (JE-02)</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>Scheibel, F. (JF-04)</td>
<td>158</td>
<td></td>
</tr>
<tr>
<td>Scheiber, S. (HI-02)</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>Scheike, T. (IE-04)</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>Scherzer, A. (FD-05)</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Scherzer, A. (HB-02)</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>Scheuerlein, C. (GD-02)</td>
<td>107</td>
<td></td>
</tr>
<tr>
<td>Schippers, C.F. (FB-14)</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Schippers, C.F. (FG-09)</td>
<td>107</td>
<td></td>
</tr>
<tr>
<td>Schlapp, J. (FD-05)</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Schlauder, C. (JD-01)</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Schlotz, R. (FG-08)</td>
<td>107</td>
<td></td>
</tr>
<tr>
<td>Schlotz, R. (FH-08)</td>
<td>109</td>
<td></td>
</tr>
<tr>
<td>Schlueter, C. (FH-13)</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Schmalhorn, E. (EE-10)</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Schmelz, J. (IB-02)</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Schmid, A.K. (FE-03)</td>
<td>104</td>
<td></td>
</tr>
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<td>97</td>
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<td>130</td>
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<td>Schmitt, C. (FG-04)</td>
<td>106</td>
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<td>Schmitt, P. (ID-01)</td>
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<td>Schmoranzewicz, E. (FG-08)</td>
<td>107</td>
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</table>

*Best student presentation award finalist*
<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taib, N.</td>
<td>(JH-11)</td>
<td>163</td>
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<td>Taib, N.</td>
<td>(JP-12)</td>
<td>166</td>
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<tr>
<td>Takagi, K.</td>
<td>(JW-03)</td>
<td>176</td>
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<td>Takagi, K.</td>
<td>(JW-11)</td>
<td>177</td>
</tr>
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<td>Takahara, K.</td>
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<td>Takahashi, H.</td>
<td>(EC-03)</td>
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<td>(ER-12)</td>
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</tr>
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<td>Takahashi, Y.</td>
<td>(GD-07)</td>
<td>118</td>
</tr>
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<td>Takanashi, K.</td>
<td>(GD-08)</td>
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<td>(FG-13)</td>
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<td>Tan, M. (ED-13)</td>
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<td>Tan, L. (JA-04)</td>
<td>149</td>
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<td>Tanalghanian, P. (GA-04)</td>
<td>113</td>
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<td>Tanalghanian, P. (GB-12)</td>
<td>115</td>
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<td>Tam, M. (JA-11)</td>
<td>164</td>
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<td>173</td>
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<td>113</td>
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<td>Tam, L. (BD-01)</td>
<td>25</td>
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<td>47</td>
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<td>Tam, X. (AU-07)</td>
<td>20</td>
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<td>42</td>
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<tr>
<td>Tanabe, K. (CD-05)</td>
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<td>181</td>
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<td>96</td>
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<td>93</td>
<td></td>
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<td>113</td>
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<td>Tanase, J. (JA-11)</td>
<td>150</td>
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<td>Tang, C. (BI-06)</td>
<td>32</td>
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<td>54</td>
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<td>Tang, X. (BW-08)</td>
<td>49</td>
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<td>Tanabe, K. (CP-15)</td>
<td>63</td>
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<td>Tanabe, K. (HC-03)</td>
<td>124</td>
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<td>Tanaka, H. (JY-05)</td>
<td>181</td>
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<td>93</td>
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<td>Taka, Y. (DP-12)</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Taka, Y. (JW-01)</td>
<td>176</td>
<td></td>
</tr>
<tr>
<td>Taniguchi, T. (CD-10)</td>
<td>55</td>
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<td>Taniguchi, T. (EB-09)</td>
<td>86</td>
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<tr>
<td>Tao, R. (YB-02)</td>
<td>2</td>
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</tr>
<tr>
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<td>Tao, W. (EC-02)</td>
<td>88</td>
<td></td>
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<td>Tao, Y. (GP-05)</td>
<td>119</td>
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<td>142</td>
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<td>87</td>
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<tr>
<td>Taubel, A. (JE-02)</td>
<td>156</td>
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<td>11</td>
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</tr>
<tr>
<td>Tedesco, J. (JE-12)</td>
<td>157</td>
<td></td>
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<tr>
<td>Teichmann, M. (FD-05)</td>
<td>103</td>
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<td>Teixeira de Paula, G. (BF-08)</td>
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<td>Tejo, F. (HP-07)</td>
<td>128</td>
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<tr>
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<td>165</td>
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<td>65</td>
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<td>66</td>
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<td>Terada, N. (JT-08)</td>
<td>173</td>
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<td>130</td>
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<td>163</td>
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<tr>
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<td>29</td>
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<tr>
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<td>124</td>
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<td>140</td>
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<td>172</td>
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<td>Thangavel, K. (JS-06)</td>
<td>176</td>
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<td>66</td>
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<td>170</td>
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<td>107</td>
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<td>178</td>
<td></td>
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<td>152</td>
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<tr>
<td>Thiery, N. (ED-04)</td>
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<td>100</td>
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<td>Tiberio, P. (JF-11)</td>
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</tr>
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</tr>
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<td></td>
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<tr>
<td>Tibu, M. (IT-07)</td>
<td>148</td>
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<td>Timopheev, A. (IR-12)</td>
<td>144</td>
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<tr>
<td>Tuscan, C. (IQ-05)</td>
<td>142</td>
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<td>Tiwari, D. (FP-08)</td>
<td>111</td>
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<td>Tiwari, D. (GD-02)</td>
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<td>77</td>
<td></td>
</tr>
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<td>Tkachev, V.V. (IR-06)</td>
<td>169</td>
<td></td>
</tr>
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<td>Tobise, M. (JW-17)</td>
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<td>Tohara, M. (IC-02)</td>
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</tr>
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<td>Töllner, M. (JE-02)</td>
<td>156</td>
<td></td>
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<tr>
<td>Tommaso, A. (FG-08)</td>
<td>107</td>
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<td>Tomasselo, R. (FD-02)</td>
<td>102</td>
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<td>110</td>
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<td>153</td>
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<tr>
<td>Ton That, L. (JP-13)</td>
<td>166</td>
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</tr>
<tr>
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<td>24</td>
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<td>Tournus, J. (JA-14)</td>
<td>167</td>
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<tr>
<td>Tourne, F. (JF-11)</td>
<td>164</td>
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<tr>
<td>Tourne, F. (JW-13)</td>
<td>177</td>
<td></td>
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<tr>
<td>Tourssaint, J. (DD-05)</td>
<td>74</td>
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<tr>
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<td>74</td>
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<td>75</td>
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<tr>
<td>Tran, T. (JH-12)</td>
<td>164</td>
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</tr>
<tr>
<td>Trapanese, M. (BD-04)</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
Ventura, J. (JT-07) .................................................. 173
Venugopal, A. (EB-05) ................................. 85
Vera-Marun, I. (FC-03) ................................. 101
Vergnaud, G. (CB-05) ................................. 52
Vergnaud, F. (KQ-07) ................................. 169
Vernier, N. (GD-01) ................................. 117
Vetrova, I. (AE-09) ................................. 11
Vicente Arche, L. (JD-11) .......................... 155
Vicente Arche, L.M. (FE-02) .......................... 104
Vichery, C. (JG-07) ................................. 160
Vicari, R. (AE-13) ................................. 11
Vicari, R. (EB-05) ................................. 85
Victoria, R. (GD-01) ................................. 117
Vidal, F. (JL-12) ................................. 164
Vidamour, I.T. (GB-09) ............................ 115
Vidarsson, H. (JD-08) ............................ 155
Vignale, G. (IF-01) ................................. 135
Vila, L. (CB-02) ................................. 51
Vila, L. (CD-06) ................................. 55
Vila, L. (CB-13) ................................. 56
Vila, L. (CF-07) ................................. 58
Vila, L. (CF-11) ................................. 59
Vila, L. (DC-11) ................................. 55
Vila, L. (CD-13) ................................. 55
Vila, L. (CB-02) ................................. 51
Vidak, I. (JD-02) ................................. 154
Visone, C. (BH-14) ................................. 34
Visone, C. (JF-07) ................................. 158
Visone, C. (JU-03) ................................. 174
Vobornik, I. (DB-06) ................................. 71
Vogel, J. (CB-02) ................................. 51
Vogel, J. (FE-08) ................................. 105
Vogel, J. (HB-08) ................................. 122
Vogel, J. (HC-07) ................................. 148
Vogler, C. (GC-01) ................................. 116
Vojáček, L. (CF-04)* ................................. 58
Volegov, A. (JT-09) ................................. 173
Volkov, A. (HP-11) ................................. 128
Volkov, O.M. (GD-04) ................................. 118
Vorokh Schmising, C. (HB-02) ................................. 122
Voronov, A.A. (EB-14) ................................. 86
Vudya Sethu, K.K. (CG-13) ................................. 61
Vukadinovic, N. (EA-04) ................................. 84
Vukadinovic, N. (FP-06) ................................. 111
Wan, C. (BG-02) ................................. 29
Wang, K. (BF-01) ................................. 27
Wang, J. (IH-05) ................................. 138
Wang, M. (GP-01) ................................. 119
Wang, M. (BP-12) ................................. 36
Wang, M. (BP-05) ................................. 36
Wang, M. (BP-06) ................................. 36
Wang, M. (BB-10) ................................. 24
Wang, S. (AS-07) ................................. 17
Wang, S. (AS-01) ................................. 17

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wang, S. (BB-03)</td>
<td>23</td>
</tr>
<tr>
<td>Wang, S. (BD-10)</td>
<td>26</td>
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<tr>
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<td>76</td>
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<tr>
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<td>68</td>
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<tr>
<td>Wang, S. (CS-14)</td>
<td>68</td>
</tr>
<tr>
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<td>166</td>
</tr>
<tr>
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<td>166</td>
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<tr>
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<td>168</td>
</tr>
<tr>
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<td>71</td>
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<td>122</td>
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<td>62</td>
</tr>
<tr>
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<td>63</td>
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<td>131</td>
</tr>
<tr>
<td>Wang, W. (HP-09)</td>
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<td>138</td>
</tr>
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<td>44</td>
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<td>52</td>
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<td>87</td>
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<td>128</td>
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<td>178</td>
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<td>Wang, W. (JY-13)</td>
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<td>166</td>
</tr>
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<td>Wang, W. (JU-05)</td>
<td>175</td>
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<td>182</td>
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<td>91</td>
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<td>Watts, J.D. (IB-08)</td>
<td>131</td>
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<td>Wawro, A. (IG-02)</td>
<td>136</td>
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</tbody>
</table>

*Best student presentation award finalist*
<table>
<thead>
<tr>
<th>Author</th>
<th>Publication Year</th>
<th>Page Number</th>
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</thead>
<tbody>
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<td>(FP-01)</td>
<td>110</td>
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</tr>
</tbody>
</table>

*XBest student presentation award finalist*
<table>
<thead>
<tr>
<th>Author</th>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yamashita, S.</td>
<td>JC-12</td>
<td>153</td>
</tr>
<tr>
<td>Yamamoto, T.</td>
<td>IH-04</td>
<td>138</td>
</tr>
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<td>87</td>
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<td>JW-03</td>
<td>176</td>
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<td>HS-05</td>
<td>146</td>
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<td>Yamashita, S.</td>
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<td>153</td>
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<td>179</td>
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<td>87</td>
</tr>
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<td>AP-10</td>
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<td>94</td>
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</tr>
<tr>
<td>Zhou, H.</td>
<td>(HA-05)</td>
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<td>Zhou, J.</td>
<td>(BG-11)</td>
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<td>Zhou, J.</td>
<td>(DC-07)</td>
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</tr>
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<td>Zhou, J.</td>
<td>(IR-18)</td>
<td>145</td>
</tr>
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<td>(AT-02)</td>
<td>19</td>
</tr>
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<td>(BP-16)</td>
<td>37</td>
</tr>
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<td>Zhou, W.</td>
<td>(CE-09)</td>
<td>57</td>
</tr>
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<td>Zhou, W.</td>
<td>(DE-04)</td>
<td>76</td>
</tr>
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</tr>
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<td>(AU-05)</td>
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<td>(JB-01)</td>
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<td>(FG-07)</td>
<td>106</td>
</tr>
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<td>Zhu, D.</td>
<td>(HH-01)</td>
<td>138</td>
</tr>
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<td>Zhu, J.</td>
<td>(AP-07)</td>
<td>12</td>
</tr>
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</tr>
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<td>(BD-10)</td>
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<td>(BF-11)</td>
<td>28</td>
</tr>
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<td>Zhu, J.</td>
<td>(BW-05)</td>
<td>49</td>
</tr>
<tr>
<td>Zhu, J.</td>
<td>(BW-06)</td>
<td>49</td>
</tr>
<tr>
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<td>(BW-07)</td>
<td>49</td>
</tr>
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<td>(BW-08)</td>
<td>49</td>
</tr>
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<td>(CS-10)</td>
<td>68</td>
</tr>
<tr>
<td>Zhu, J.</td>
<td>(FC-01)</td>
<td>100</td>
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<tr>
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<td>(IB-09)</td>
<td>131</td>
</tr>
<tr>
<td>Zhu, L.</td>
<td>(BC-03)</td>
<td>24</td>
</tr>
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<td>Zhu, L.</td>
<td>(IQ-04)</td>
<td>142</td>
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<tr>
<td>Zhu, M.</td>
<td>(EQ-01)</td>
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<td>Zhu, M.</td>
<td>(IS-10)</td>
<td>146</td>
</tr>
<tr>
<td>Zhu, M.</td>
<td>(JC-09)</td>
<td>153</td>
</tr>
<tr>
<td>Zhu, R.</td>
<td>(AU-09)</td>
<td>20</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist

Zhu, T. (CQ-09) ................................ 65
Zhu, T. (JP-09) ................................ 166
Zhu, T. (JO-09) ................................ 168
Zhu, X. (AQ-12) ................................ 14
Zhu, X. (AR-04) ................................ 15
Zhu, X. (AU-05) ................................ 20
Zhu, X. (BB-01) ................................ 23
Zhu, X. (BP-08) ................................ 36
Zhu, X. (BT-16) ................................ 45
Zhu, Y. (IQ-06) ................................ 142
Zhu, Z. (BA-05) ................................ 22
Zhu, Z. (BI-03) ................................ 31
Zhu, Z. (BJ-13) ................................ 34
Zhuang, B. (AP-08) .............................. 12
Zhao, L. (AQ-10) ................................ 14
Zhao, L. (BQ-11) ................................ 38
Zhao, L. (BR-08) ................................ 40
Zhao, L. (BV-08) ................................ 48
Zimnyakova, P. (FP-07) .......................... 111
Zivanov, L. (IS-12) .............................. 146
Zivieri, R. (HD-02) .............................. 125
Zobkalo, I. (DF-09) .............................. 78
Zografos, O. (EC-07) ............................ 88
Zollitsch, C.W. (ED-06) ........................ 89
Zollitsch, C.W. (ED-13) ........................ 90
Zoppellaro, G. (JA-13) .......................... 150
Zou, J. (BK-01) ................................ 34
Zou, J. (BO-11) ................................ 38
Zou, J. (BR-08) ................................ 40
Zou, X. (BJ-12) ................................ 131
Zou, Y. (BS-06) ................................ 42
Zou, Y. (DP-11) ................................ 82
Zucchi, C. (CB-05) ............................... 52
Zuo, L. (BJ-10) ................................ 151
Zuo, Y. (BG-12) ................................ 30
Zurauskienë, N. (IB-13) ........................ 131
Zuzek Rozman, K. (JC-11) ...................... 153
Zverev, V. (GC-07) .............................. 116
Zverev, V.V. (CS-01) ........................... 67
Zverev, V.V. (CS-12) ........................... 68
Zvezdin, A. (EB-14) ............................. 86
Zvezdin, K. (CS-02) ............................. 67
Zvezdin, K. (ER-08) ............................. 96
Zvezdin, K. (FP-14) ............................. 112