

Topical Group on Magnetism and its Applications

units.aps.org/units/gmag/

Note from the Chair

Dear GMAG Member:

In this Winter Newsletter recent GMAG activities and programs are highlighted. Foremost, there is information about the 2017 March Meeting, that will be held in New Orleans LA, from March 13-17. Our GMAG program chair, Chris Leighton, and his team have arranged a very exciting program, covering many important advances in magnetism.

Among the activities at the March Meeting, I would like to call your attention to the annual GMAG Business Meeting on Tuesday March 14th, 2017 (5:45pm-6:45pm, Session J50, Room 397 at the Convention Center). At this meeting we will welcome our newly elected GMAG-sponsored APS Fellows, newly elected GMAG officers, and honor the student dissertation and travel award winners. We hope to see you there.

Finally, please note various deadlines listed towards the end. In particular, the deadline for Fellowship nominations sponsored by GMAG is June 1, 2017.

*Suzanne te Velthuis, GMAG Chair
email: tevelthuis@anl.gov*

Election of GMAG Officers for 2017-2018

The GMAG election ballot closed on February 3, 2017. Congratulations to our newly elected officers:

Vice Chair:
Eric Fullerton (University of California San Diego)

Secretary-Treasurer:
Yumi Ijiri (Oberlin College)

Members-at-Large:
June Lau (NIST)
Elke Arenholz (Lawrence Berkeley National Laboratory)

We are pleased to have our new officers join us in serving the magnetism community. Their terms will start after the March Meeting. We thank the Nominating Committee, Ilya Krivorotov (Chair), Peter Fischer, Julie Grollier, Roland Kawakami (APS Council Representative) for putting together our slate of candidates.

We would also like to thank outgoing Executive Committee members for their dedicated service: Past Chair Jonathan Sun, Secretary-Treasurer Tiffany Santos, and Members-at-Large John Cumings and Jonathan Friedman.

GMAG Sponsored APS Fellows

In 2016, from nominations by the magnetism community, GMAG recommended 5 APS members to be elected as Fellows of the APS. We were very pleased that all 5 were elected by the APS General Fellowship Committee. The new GMAG APS Fellows are listed below along with their citations.

Laura Heyderman, ETH Zurich - Paul Scherrer Institute
Citation: For important contributions to the study of mesoscopic magnetic systems, with the observation of monopole-like excitations, thermally active behavior, and phase transitions in arrays of coupled frustrated magnets; and the control of magnetism at the nanoscale in hybrid systems.

Laura H. Lewis, Northeastern University, USA
Citation: For investigations of fundamental structure-property relationships in functional magnetic materials from a unified perspective, specifically for advancing permanent magnet, magnetic cooling, and biomedical applications.

Maria Varela, Universidad Complutense de Madrid, Spain
Citation: For pioneering contributions to the physics of complex oxides through electron energy loss spectroscopy.

Xixiang Zhang, KAUST, Saudi Arabia
Citation: "For innovative contributions to macroscopic quantum tunneling of magnetization and resonant spin tunneling in magnetic molecules, and the discovery of materials with large magnetocaloric effects for room temperature magnetic cooling."

Igor Zutic, State University of New York – Buffalo, USA
Citation: For pioneering contributions to the theory of spin-dependent transport, magnetism in semiconductor nanostructures, and novel spintronic devices.

GMAG Fellowship Selection in 2017

Please nominate deserving candidates for APS Fellowship. Send inquiries regarding nominations to Prof. Eric Fullerton, our new Vice Chair. The deadline for nominations through GMAG is June 1, 2017. Previous nominators should note that APS has revised the submission system. More detailed information and nomination instructions can be found at the links provided at the end of this newsletter.

GMAG Dissertation Awardee 2017

In order to encourage students working in magnetism, every year GMAG sponsors Outstanding Dissertation in Magnetism awards. These awards recognize students who have conducted outstanding research leading to their dissertation. The award consists of an invited talk in an appropriate session at the APS March Meeting, a \$500 prize to the student, and up to \$250 toward his/her travel expenses to the APS March Meeting.

The 2017 recipient of the GMAG Outstanding Dissertation in Magnetism Award is

Kai Chen, University of Arizona
Thesis title: Spin Transport Magnetic Nanostructures.
Invited talk: B47.00007

Congratulations!

The deadline for nominations for the 2018 Outstanding Dissertation in Magnetism Awards is October 1, 2017. See the GMAG website (<http://www.aps.org/units/gmag/awards/index.cfm>) and the August Newsletter for detailed instructions.

GMAG Student Travel Awardees 2016-17

To increase student participation and involvement in activities essential to GMAG and the APS as a whole, GMAG will sponsor twelve Student Travel Awards for the March Meeting. The awards will consist of \$250 in travel assistance to attend the meeting. The selected students will be expected to attend the GMAG business meeting, and also help out at the GMAG membership table and/or serve one shift at the “Contact Congress” booth as part of APS outreach for congressional support for scientific research. This year’s (March Meeting 2017) award winners are:

Milos Baljovic, Paul Scherrer Institute, Switzerland
Benedetta Flebus, Utrecht University, Netherlands
Adam Goad, University of Maryland, Baltimore County, USA
Isaiah Gray, Cornell University, USA
Alannah Hallas, McMaster University, Canada
Alexander Hristov, Stanford University, USA
Amanda Huon, Drexel University, USA
Alex Kane, University of California, Davis, USA
Anirban Kundu, University of Arizona, USA
Pavel Maksimov, University of California, Irvine, USA
Carola Purser, Ohio State University, USA
Chi Tang, University of California, Riverside, USA

March Meeting 2017 GMAG Program

GMAG is sponsoring or co-sponsoring 84 scientific sessions, including 10 symposia and 72 Focus Sessions.

The GMAG sponsored/co-sponsored symposia are:

- G19.** DMP/GMAG Awards Session (DMP/GMAG)
- G24.** Spin-orbit Coupling at Interfaces: Blessing or Curse for Future Spintronic Devices (GMAG)
- E24.** Spin-orbit Torques and Spin Waves (GMAG)
- F24.** Graphene Spintronics (GMAG)
- K24.** Spectroscopic Signatures of Fractionalized Excitations in Quantum Magnets (DCMP/GMAG)
- L23.** Interplay of Magnetism, Superconductivity and Unconventional Order in Heavy Fermion Materials (GMAG)

S22. Artificial Spin Ice and Related Frustrated Artificial Materials (DCMP/GMAG)

V24. Detection and Imaging of Magnetic Dynamics using NV Centers in Diamond (GMAG)

K22. Room Temperature Multiferroic BiFeO₃ (DCMP/GMAG)

Y21. Emergent Magnetism at Oxide Interfaces (GMAG)

In the DMP/GMAG Awards Session this year (see above), Professor Kate Ross of Colorado State University will deliver a talk on “Quantum Frustrated Magnetism and its Expression in the Ground State Selection of Pyrochlore Magnets”. Kate received the George E. Valley Jr. Prize this year for her work in this area. The Valley prize is awarded each year to one individual in the early stages of his or her career, for an outstanding contribution to physics. The prize consists of \$20,000 and a certificate.

GMAG Business Meeting

The GMAG annual Business Meeting (Session J50 in the program) will be held on Tuesday March 14th, 2017, 5:45pm - 6:45pm in Room 397 at the Convention Center. Please join us for the introduction of new GMAG fellows and student award winners! Food and drink refreshments will be served at the meeting.

Thanks to GMAG Focus Topic Organizers:

We thank all of the focus topic organizers who contributed to the success of the March Meeting Program:

- 10.1.1** *Magnetic Nanostructures: materials and phenomena*
Kathryn Krycka, NIST Gaithersburg
Kristen Buchanan, Colorado State University
Liam O’Brien, University of Cambridge
- 10.1.2** *Emergent Properties of Bulk Complex Oxides*
Daniel Phelan, Argonne National Laboratory
Xianglin Ke, Michigan State University
Turan Birol, University of Minnesota
- 10.1.3** *Magnetic Oxide Thin Films and Heterostructures*
Steve May, Drexel University
Yayoi Takamura, University of California, Davis
James Rondinelli, Northwestern University
- 10.1.4** *Spin Transport and Magnetization Dynamics in Metals-Based Systems*
Barry Zink, University of Denver
Chris Hammel, Ohio State University
Christian Back, Regensburg University
Kirill Belaschenko, U. Nebraska, Lincoln
- 10.1.5** *Spin-Dependent Phenomena in Semiconductors*
Paul Crowell, University of Minnesota
Scott Crooker, Los Alamos National Laboratory
Jaroslav Fabian, Regensburg University
- 10.1.6** *Frustrated Magnetism*
Gia-Wei Chern, University of Virginia
Vivien Zapf, Los Alamos National Laboratory
Stuart Calder, Oak Ridge National Laboratory

10.17 *Spin-orbit Mediated Chiral Spin Textures*
Geoff Beach, MIT
Christopher Marrows, University of Leeds
Amanda Petford-Long, Argonne National Laboratory
Andre Thiaville, Paris-Sud University

10.18 *Low-Dimensional and Molecular Magnetism*
Mark Meisel, University of Florida
Matt Stone, Oak Ridge National Laboratory
Stephan Haas, University of Southern California

Thanks to GMAG sorters: Thanks to everyone who participated in the abstract sorting meeting on December 8-9, 2016: G. Beach (MIT), G.-W. Chern (Virginia), P. Crowell (Minnesota), J. Cumings (Maryland), A. Grutter (NIST), I. Gilbert (NIST), D. Gopman (NIST), P. C. Hammel (Ohio State), A. Hanbicki (NRL), K. Krycka (NIST), S. Hill (Florida State), S. May (Drexel), M. Meisel (Florida), D. Phelan (Argonne), W. Ratcliff (NIST), M. Stiles (NIST), C. Leighton (Minnesota), O. Tchernyshyov (Johns Hopkins), B. Zink (Denver).

Nominations for APS Prizes and Awards

APS prize descriptions and nomination deadlines appear at <http://www.aps.org/programs/honors/index.cfm>. Several prizes of interest to the GMAG membership and their deadlines are:

APS Fellowship (GMAG Deadline is June 1, 2017)

For more details and instructions see <http://www.aps.org/units/gmag/fellowship/index.cfm> and <http://www.aps.org/programs/honors/fellowships/nominations.cfm>. If the nominee is a member of the GMAG Executive Committee, please make the nomination to another Unit of the APS or defer the nomination until his or her term has finished.

Oliver E. Buckley Condensed Matter Prize (June 30, 2017)

To recognize and encourage outstanding theoretical or experimental contributions to condensed matter physics.

Lars Onsager Prize (June 30, 2017)

To recognize outstanding research in theoretical statistical physics, including the quantum fluids.

Frank Isakson Prize for Optical Effects in Solids (June 30, 2017)

To recognize outstanding optical research that leads to breakthroughs in the condensed matter sciences.

James C. McGroddy Prize for New Materials (June 30, 2017)

To recognize and encourage outstanding achievement in the science and application of new materials. This shall include the discovery of new classes of materials, the observation of novel phenomena in known materials leading to both fundamentally new applications and scientific insights, and shall also include theoretical and experimental work contributing significantly to the understanding of such phenomena.

George E. Valley Jr. Prize (July 1, 2018, awarded biennially)

To recognize one individual in the early stages of his or her career for an outstanding scientific contribution to physics that is deemed to have significant potential for a dramatic impact on the field.

Prize for a Faculty Member for Research in an Undergraduate Institution (June 30, 2017)

To honor a physicist whose research in an undergraduate setting has achieved wide recognition and contributed significantly to physics and who has contributed substantially to the professional development of undergraduate physics students.

Other Recent Magnetism-related News

The IUPAP Commission on Magnetism (C9) has announced that the 2016 IUPAP Young Scientist Prize in the field of Magnetism will be awarded to:

Dr. Wei Han, Peking University, China.

“For significant contributions to spin injection, spin transport and spin relaxation in graphene, and to the discovery of interface transparency and triangular antiferromagnetic IrMn₃ for spin orbit torque in magnetic heterostructures.”

This award will now be made annually. For details see: <http://iupap.org/commissions/c9-magnetism/c9-news-2/>

Dr. Han is a previous recipient of the GMAG Outstanding Dissertation in Magnetism Award (2012).

GMAG was proud to sponsor the Best Student Presentation Award at the 2016 MMM in New Orleans.

The winner received \$1000 award, and the five finalists received \$250 awards. Congratulations to the winner and finalists! For details see: http://magnetism.org/?page=student_presentation_awards

The winner was:

Jamileh Beik Mohammadi, University of Alabama
Micromagnetic Investigations of Higher Order Anisotropy in Ultra-Thin Films with Fluctuating Perpendicular Anisotropy.

The finalists were:

Jeffrey Brock, Miami University
Unusual Nature of the Martensite and Ferromagnetic Transitions in Ni₂Mn_{0.4-x}Fe_xCr_{0.6}Ga Heusler Alloys.

Simon Couture, University of California, San Diego
Coupling Electrodynamics and Micromagnetics: Modeling of Eddy Currents.

Arsham Ghasemi, University of York
The Experimental and Theoretical Study of Mn Doped Bi₂Te₃.

Matthew Riou, CNRS/Thales
Brain-Inspired Computing Using the Transient Dynamics of Spin-Torque Oscillators.

Pankaj Sethi, Nanyang Technological University
Spin-Orbit Torque Induced High Speed Domain Wall Motion in Co/Pt Dual Stack.

Request for Magnetism Outreach Proposals

GMAG invites proposals directed towards educating non-scientists and the general public about the role of magnetism. Funds up to \$5000 per project (larger proposals may be considered) are available to cover supplies and expenses.

These grants should foster new activities and are not meant to support ongoing programs. Examples of outreach activities include (but are not limited to) the development of magnetism kits that may be used at elementary schools and/or at museums and other public places, the development of a high school lab on magnetism, and the production of videos on magnetism that would appeal to the general public. Preference will be given to innovative activities that are documented so that they can be reproduced elsewhere.

GMAG will disseminate the outcome of the activities to the GMAG membership through the GMAG Newsletter and to the broader magnetism community through the GMAG website. For these purposes, proposers will be required to provide GMAG with appropriate material when requested. Proposers are encouraged to consider alternate avenues for dissemination. This should include presentation of the results at an APS meeting.

The GMAG Executive Committee will review proposals on an ongoing basis. Although partnership with a GMAG member is encouraged, all applications for projects related to outreach in magnetism will be considered. The GMAG Executive Committee can assist in identifying potential partners for outreach proposals submitted by non-members.

Important Information

These funds cannot be used for salaries, stipends, etc. of the main participants, but can be used to hire a student, an intern, or professional services if that is essential for the project. An APS statement on indirect costs is available at <http://www.aps.org/programs/outreach/upload/rfp-indirectcosts15.pdf>.

Recently funded proposal:

- Physics Youth Scholastic and Instructing Camp for Orlando Scientists, Dr. Enrique del Barco, Department of Physics, University of Central Florida. A week long camp to be offered to high school students starting in Summer 2017.

Application process

To apply for these funds, please submit the following information as one PDF file to the current GMAG Chair. That is, to Suzanne te Velthuis (tevelthuis@anl.gov) until March 14, 2017, and to Chris Leighton (leighton@umn.edu) after March 14, 2017. The PDF should include:

- Cover sheet clearly stating the name, address, phone number, and email of the main contact person for your application. Include the name of your program, and, if affiliated with an institution, the department and institution you represent.
- One-page CV for main contact person.
- Narrative description (no more than two pages) of your program. Include a description of the proposed activity or activities, the anticipated impact and the process of documentation to enable reproduction of the activity, details of other financial support (if any), and description of personnel working on the program (instructional lab technicians, students, professors, etc).
- Rough budget detailing plans for utilizing the funds.
- Letter of support from your department chair or similar administrative official (this can be sent separately, as long as it clearly identifies the main contact person and institution).
- Tax ID number or Employee ID number if part of an organization, Social Security Number if an individual. For universities, the organizational tax ID number typically can be obtained from the grants and contracts department.

Important Deadlines

DATE (2017)	REASON	CONTACT
June 1	GMAG Fellowship Nominations	Eric Fullerton; efullerton@ucsd.edu
August/September	Invited speaker & symposium nominations for 2018 March Meeting	Stephen Hill; shill@magnet.fsu.edu
October 1	GMAG Dissertation Award Nominations	Chris Leighton; leighton@umn.edu
December 1	Student Travel Grants for 2018 March Meeting	Eric Fullerton; efullerton@ucsd.edu
Ongoing	Outreach Proposals	Chris Leighton; leighton@umn.edu

Upcoming Conferences

APS March Meeting 2017

March 13-17, 2017 | New Orleans, LA

Intermag Conference – Dublin, Ireland

April 24-28, 2017 | Dublin, Ireland

28th Magnetic Recording Conference (TMRC 2017)

August 2-4, 2017 | Tsukuba, Japan

62nd Annual Conference on Magnetism and Magnetic Materials (MMM 2017)

November 6-10, 2017 | Pittsburgh, PA

APS March Meeting 2018

March 5-9, 2018 | Los Angeles, CA

21st International Conference on Magnetism (ICM 2018)

July 16-20, 2018 | San Francisco, CA

An up-to-date list of APS and GMAG related conferences can be found on the GMAG website:

<http://www.aps.org/units/gmag/meetings/index.cfm>

An additional list of magnetism-related meetings can be found at this link: http://magnetism.eu/TPL_CODE/TPL_AGENDALISTE/6-agenda.htm

Ask your Colleagues to Join GMAG

For only \$10 additional dues, APS members can become GMAG Members with the following benefits (students can join for free):

- GMAG newsletter.
- Eligibility for GMAG graduate student awards and sponsorship.
- Potential to increase the number of APS Fellows sponsored by GMAG.
- Potential to increase the number of invited talks on magnetism at the March Meeting.
- Opportunity to help shape the voice and future of the magnetism community (your community) in the US.

See the GMAG website: <http://www.aps.org/units/gmag>.
TO JOIN: Go to the APS page for “Membership Units” (<http://www.aps.org/membership/units/join-unit.cfm>) and follow instructions for adding a unit to your membership. Or call the APS at 301-209-3280 and tell a Membership Representative that you want to join the GMAG topical group.

The GMAG Executive Committee:

Chair: Suzanne G.E. te Velthuis (tevelthuis@anl.gov)

Chair-Elect: Chris Leighton (leighton@umn.edu)

Vice-Chair: Stephen Hill (shill@magnet.fsu.edu)

Past Chair: Jonathan Sun (jonsun@us.ibm.com)

Secretary-Treasurer: Tiffany Santos
(tiffany.santos@hgst.com)

Members-At-Large:

John Cumings, *University of Maryland*

Jonathan Friedman, *Amherst College*

Ilya Krivorotov, *University of California, Irvine*

David Lederman, *University of California, Santa Cruz*

Christian Binek, *University of Nebraska, Lincoln*

Peter Fischer, *Lawrence Berkeley National Laboratory,
University of California, Santa Cruz*

Thanks for being involved with GMAG and please do not hesitate to get actively involved in the many activities described within this newsletter.