Winter 2017 Newsletter

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A Message from the Chair

The 2017 March meeting is almost upon us. I would like to share some highlights of DMP-organized elements of this year’s outstanding program and to emphasize important upcoming deadlines for the 2018 March meeting and other DMP activities.

DMP principally contributes to the March meeting through the organization of Focus Topic sessions. Roughly 20% of the submitted abstracts to the 2017 March meeting were submitted to DMP-led Focus Topics, and this newsletter provides links and details describing the numerous DMP sessions and events in New Orleans. DMP leads 19 Focus Topics and co-sponsors 15 others, which led to 241 total sessions. DMP also sponsors three invited sessions during the week, including the Monday afternoon prize session (joint with GMAG this year) in which speak the recipients of the McGroddy Prize for new Materials, Paul Canfield, and the Adler Lectureship awardee, Heike Riel. Amanda Petford-Long has organized our annual “Physics for Everyone” symposium, Wednesday midday, around the theme of “Physics meets the Arts”. Speaking will be Mark Walton on the origin of art’s appearance, Pupa Gilbert on the properties of color, Charles Falco on the role of optical science in the history of art, Paul Halpern on thinking in pictures (diagrams and problem solving), and Volker Rose on Pablo Picasso’s paints. The third invited session, Thursday midday, recognizes recent progress in physics inspired by the contributions of Walter Kohn, inventor of the density functional theory and Nobel Laureate, who died in April 2016. The speakers will be Qian Niu on semiclassical theories of transport, Ben Murdin on advances in shallow impurity physics, Kieron Burke on the properties and nature of density functionals, as well as Giulia Galli and Matthias Scheffler on the achievements of density functional theory in chemistry, materials, and condensed matter physics.

DMP recognizes our award winners and the new APS fellows nominated through DMP on Tuesday evening, March 14, from 5:30-7:00 at the New Orleans Marriott, Mardi Gras Ballroom.
Salon ABCD (3rd Floor). We also recognize the achievements of junior scientists through the Ovshinsky Travel Awards, the IUPAP C-10 Young Scientist Prize, and the Richard L. Greene Dissertation Award in Materials and Condensed Matter Physics. The annual DMP business meeting follows immediately after in the Marriott Bacchus room. Topics to be discussed in that meeting include the Focus Topics for the 2018 March meeting, as well as the changes in the by-laws that are under consideration by DMP.

Now is the time to propose new Focus Topics for next year’s March meeting, by contacting Amanda Petford-Long, who will be the DMP Program Chair for the 2018 March Meeting in Los Angeles. A DMP focus topic provides a structure to gather contributed and invited talks together in a series of coordinated sessions that foster increased discussion on a specific area. Please send suggestions to Amanda Petford-Long (petford.long@anl.gov) following the instructions provided later in this Newsletter. Please consider suggesting invited speakers to these Focus Topics when the selections and organizers are announced; these Focus Topics are central to DMP’s role in the March meeting.

DMP recognizes major accomplishments in materials physics through the David Adler Lectureship Award and the James C. McGroddy Prize for New Materials. Please consider advancing a deserving colleague for one of these prestigious awards. Application packages are due July 1, 2017. See the APS Prizes, Awards and Fellows pages for details of the nomination processes.

New APS Fellowship nominations to DMP are due May 1, 2017. Nitin Samarth, just elected to begin as Vice-Chair of DMP following the March Meeting, will chair the selection process.

None of these activities happen without the contribution of an army of volunteers, including Focus Topic organizers and the DMP Executive Committee. I would like to thank Dan Dessau, the DMP Program Chair for the 2017 March Meeting, for his efforts; you can see the results in the outstanding program of talks and sessions assembled for this year’s meeting. Secretary-Treasurer Robert Nemanich is concluding his term at the end of the March Meeting, and has been a tireless advocate for DMP and has kept the rest of us on track and meeting our deadlines (all with a smile). In my role I would have been lost without the advice and example of John Mitchell, the DMP Past Chair, who will be rotating off the DMP Executive Committee and beginning a new leadership commitment with GMAG. My thanks to John, also to Jim Chelikowsky, DMP Councilor, who represented the perspective of materials physics at the APS Council, especially in relation to the new journal, Physical Review Materials, and to our Members at Large completing their terms, Emilia Morosan and Jeff Neaton, who provided invaluable contributions to the Focus Topic organization. I would also like to welcome the new members of the DMP Executive Committee, Vice-Chair-elect Nitin Samarth, Councilor Sam Bader, Secretary-Treasurer Charles Ahn, and Members at Large Ezekiel Johnston-Halperin and Ni Ni.

It has been an honor to serve as DMP Chair this past year, and I thank all of you for the opportunity.

Finally, I would like to acknowledge the passing of a giant of material physics, Millie Dresselhaus, on February 20. Her exceptional research contributions, especially to the physics of carbon, her mentorship of junior scientists, and her commitment to service (including as President of the American Physical Society) have been and will continue to be an inspiration. Please see the APS obituary for her at https://www.aps.org/publications/apsnews/updates/mildred.cfm .

Michael Flatté, DMP Chair
Call for DMP Focus Session Topics for 2018 APS March Meeting
(March 5-9, 2018 in Los Angeles)

The Division of Materials Physics sponsors a wide range of Focus Topics as its primary structure for the March Meeting. Typically spanning several sessions throughout the March Meeting, Focus Topics allow an in-depth view of forefront materials physics research areas and connect invited speakers to associated contributed abstracts.

Each year, the existing set of Focus Topics is evaluated for inclusion in the next year's program. In addition, new candidates for Focus Topics are considered based on timeliness, an assessment of the community interest, and uniqueness with the existing DMP program and those of sister units. Ideas coming from the DMP community at large are an extremely important part of this process.

To that end, the DMP Executive Committee solicits your input for the 2018 Focus Topic slate. New Focus Topics should represent a significant topic that would support 3 or more March Meeting sessions (each session typically has 1 invited talk and 12 related contributed talks).

Please send proposed Focus Topics to DMP Secretary/Treasurer Robert Nemanich (robert.nemanich@asu.edu) by Monday, February 27, 2017 (late submissions will be considered if possible). Please include

- Descriptive Title of the Focus Topic
- The nominator’s name, affiliation, phone number and e-mail address
- A brief abstract noting timeliness and uniqueness of the topic relative to the existing program (for examples: http://www.aps.org/units/dmp/meetings/invited-speaker.cfm).
- A description of the intended audience that supports the size and scope of a Focus Topic.
- Suggestions for possible organizers.

Any additional information you would like to provide that will help the DMP Executive Committee in its decision-making process will be appreciated. For your reference, a complete list of the 2016 Focus Topics is included in this mailing. Full descriptions of the 2016 Focus Topics can be found online at http://www.aps.org/units/dmp/meetings/invited-speaker.cfm.

If you have any questions or would like assistance in the preparation of your proposal, please contact DMP Vice Chair Amanda Petford-Long (Petford-Long@anl.gov).

Thank you in advance for your help in this extremely important part of planning for the future success of the DMP program.

Sincerely,
Amanda Petford-Long, DMP Vice Chair and 2018 Program Chair
Dan Dessau, DMP Chair-Elect and 2017 Program Chair

DMP led Focus Topics for 2017 (Details: https://www.aps.org/units/dmp/meetings/invited.cfm)

7.1.1: Dielectric and Ferroic Oxides [Same as 11.1.1]
7.1.3: Dirac and Weyl semimetals (same as 12.1.10)
7.1.4: Organometal Halide Perovskites: Photovoltaics and Beyond [Same as 12.1.11]
8.1.2: Dopants and Defects in Semiconductors
9.1.1: Fe-based Superconductors {same as 16.1.15}
9.1.2: Topological Superconductivity
Proposed Changes to DMP Bylaws

The current bylaws that govern DMP Executive Committee roles and responsibilities do not permit the use of special elections or special ballots for any changes to these bylaws. This is not in keeping with the practices of our sister units and makes for a cumbersome process that requires a minimum of 15 months and up to 24 months to complete. While I was chair of DMP, I suggested to the executive committee that we change our bylaws to make special ballots for this purpose possible in the future; the motion was approved. The text of the existing bylaws can be found on the website and the proposed changes can be accessed here (DMP Bylaws update). You will note that the proposed changes extend beyond the issue of special elections. These changes are required so that we comply with new APS governance policies. The DMP Executive Committee recommends approval of these changes by the membership.

As a first step, we have received approval from the APS Council for making these changes to the DMP Bylaws. The next steps are:

- Public comment at the 2017 DMP Business Meeting, to be held Tuesday, March 14 from 7:00 p.m. at the March Meeting 2017 in New Orleans.
- A vote by the membership on the proposed change to the bylaws at our regular election of officers in the fall of 2017.

The executive committee invites any member in good standing of DMP to join us at the Business Meeting to make any comments on the proposed changes to the bylaws. Comments by email to DMP Past Chair, John Mitchell (mitchell@anl.gov) are welcome and will be read at the meeting.

We look forward to receiving your comments or to hearing from you in person at the Business Meeting.

New Members of the Executive Committee

The following members were elected to serve on the DMP Executive Committee:

Vice Chair: Nitin Samarth, Pennsylvania State University
Secretary Treasurer: Charles Ahn, Yale University
DMP Division Councilor: Samuel D. Bader, Argonne National Laboratory
Member at Large: Ezekiel Johnston-Halperin, The Ohio State University
Member at Large: Ni Ni, University of California, Los Angeles
We congratulate the new members of the Executive Committee and look forward to their participation and leadership.

**DMP Executive Committee for 2017-2018**

The Executive Committee Officers and Members-at-Large for the 2017-2018 year, (who begin their terms begin following the March Meeting):

**Officers:**

- Chair: Daniel S. Dessau, (04/17 - 03/18)  
  University of Colorado, Boulder
- Chair Elect: Amanda K Petford-Long, (04/17 - 03/18)  
  Argonne National Laboratory
- *Vice Chair: Nitin Samarth, (04/17 - 03/18)  
  Pennsylvania State University
- Past Chair: Michael E. Flatté, (04/17 - 03/18)  
  University of Iowa
- Councilor: Samuel D. Bader, (01/17 - 12/20)  
  Argonne National Laboratory
- *Secretary/Treasurer: Charles Ahn, (04/17 - 03/20)  
  Yale University

**Members-at-Large:**

- Peter M. Gehring, (04/15 - 03/18)  
  NIST Center for Neutron Research
- John Singleton, (04/15 - 03/18)  
  National High Magnetic Field Laboratory, Los Alamos National Laboratory
- Scott Chambers, (04/16 - 03/19)  
  Pacific Northwest National Laboratory
- Michelle Johannes, (04/16 - 03/19)  
  Naval Research Laboratory
- *Ezekiel Johnston-Halperin, (04/17 - 03/20)  
  The Ohio State University
- *Ni Ni, (04/17 - 03/20)  
  University of California, Los Angeles
  *Newly elected

**APS's Office of Public Affairs: Helium-Related Activities**

The American Physical Society – in partnership with the Materials Research Society and American Chemical Society – hosts an easy-to-use website that connects researchers who rely on helium with companies that can help them transition to helium-conserving technologies: [https://conserve-helium.org/](https://conserve-helium.org/)

The website helps researchers determine if it is economically favorable to transition to equipment that reduces helium usage and provides the option to be connected directly to equipment vendors.
Many of the vendors have expressed willingness to develop financing terms, such as lease-to-own, that are compatible with federal funding.

NSF already provides its grantees considerable flexibility that would allow them to take advantage of lease-to-own arrangements and APS, ACS and MRS are now working with other agencies to establish a similar path for scientists, engineers, and innovators supported by the Defense labs, DOE, NIST, NIH, and NASA.

**March Meeting: Location**

The 2017 March Meeting of the APS will take place, March 12-17, in the Ernest N. Morial Convention Center-New Orleans, 900 Convention Center Blvd, New Orleans, Louisiana. All scientific sessions will be in the Convention Center but events and activities may be in the Convention Center or the Baltimore Hilton Inner Harbor hotel. Check event details for time and place.

For further information see: [http://www.aps.org/meetings/march/index.cfm](http://www.aps.org/meetings/march/index.cfm)

For the DMP sponsored sessions see: [http://meetings.aps.org/Meeting/MAR17/SessionIndex2?SponsorID=DMP](http://meetings.aps.org/Meeting/MAR17/SessionIndex2?SponsorID=DMP)

**March Sponsored Meetings: DMP/DCMP Fellows and Awards Reception and Business Meeting**

The Division of Materials Physics will sponsor the following meetings during the 2017 March meeting. This is your opportunity to interact with the Executive Committee and to become informed of the activities of the Division.

Tuesday, March 14
DCMP/DMP New Fellows & Award Winners Reception
5:30 p.m. - 7:00 p.m.
New Orleans Marriott, Mardi Gras Ballroom Salon ABCD (3rd Floor)

DMP Business Meeting, (JA50)
7:00-8:00pm
New Orleans Marriott, Bacchus Room (4th Floor)

**Division of Materials Physics Ovshinsky Student Travel Awards**

The Ovshinsky Student Travel Awards and Honorable Mention Awards have been established to assist the career of student researchers. The Awards are in memory of Iris and Stanford Ovshinsky who had a very strong interest and commitment to scientific education. The awards have been endowed by the Ovshinsky family, their colleagues at Energy Conversion Devices (ECD) companies and all their numerous friends from many social, intellectual and business relationships.

We are extremely grateful to the Ovshinsky family for this award. Since the original launch of the award, the family have provided further gifts to endow the awards.
The Ovshinsky Student Travel Awards will be presented at the DCMP/DMP New Fellows and Award Winners Reception, Tuesday, March 14, 5:30 p.m. at the New Orleans Marriott, Mardi Gras Ballroom Salon ABCD (3rd Floor).

The recipients of the 2017 Ovshinsky Student Travel Awards for Materials Physics are:

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<tr>
<th>NAME</th>
<th>INSTITUTION</th>
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<tbody>
<tr>
<td>Nenian Charles</td>
<td>Drexel University</td>
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<tr>
<td>Matthew Gray</td>
<td>Stanford University</td>
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<tr>
<td>Hilary Jacks</td>
<td>University of California, Berkeley</td>
</tr>
<tr>
<td>Marzieh Kavand</td>
<td>University of Utah</td>
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<tr>
<td>Karthik Krishnaswamy</td>
<td>University of California, Santa Barbara</td>
</tr>
<tr>
<td>Haixing Li</td>
<td>Columbia University</td>
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<tr>
<td>Xiaolong Liu</td>
<td>Northwestern University</td>
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<tr>
<td>Patrick Marshall</td>
<td>University of California, Santa Barbara</td>
</tr>
<tr>
<td>Yu Pan</td>
<td>Pennsylvania State University</td>
</tr>
<tr>
<td>Abhinav Prakash</td>
<td>University of Minnesota, Twin Cities</td>
</tr>
<tr>
<td>Doaa Taha</td>
<td>Wayne State University</td>
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The recipients of the 2017 Ovshinsky Student Travel Honorable Mention Awards for Materials Physics are:

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<tr>
<th>NAME</th>
<th>INSTITUTION</th>
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<tbody>
<tr>
<td>Kaveh Ahadi</td>
<td>University of California, Santa Barbara</td>
</tr>
<tr>
<td>Lin Du</td>
<td>University of Massachusetts Amherst</td>
</tr>
<tr>
<td>Jamie Elias</td>
<td>Washington University in St. Louis</td>
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<tr>
<td>Teresa Esposito</td>
<td>Rensselaer Polytechnic Inst.</td>
</tr>
<tr>
<td>Michael Ford</td>
<td>University of California, Santa Barbara</td>
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<tr>
<td>Wei Jiang</td>
<td>University of Utah</td>
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<tr>
<td>Ramya Vishnubhotla</td>
<td>University of Pennsylvania</td>
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Division of Materials Physics Post-Doctoral Travel Awards

The DMP Post-Doctoral Travel Awards have been established this year to recognize innovative materials physics research by Post-Doctoral researchers that will be presented at the APS March Meeting. The Awards are supported through the Division of Materials Physics.

The recipients will receive $800 Travel Awards to support participation in DMP Focus Topic sessions at the APS 2017 March Meeting sessions. The selection of the recipients of the DMP Post-Doctoral Travel Awards is based on the research quality, the impact of the research at the March Meeting and the innovative contribution of the post-doctoral researcher.

The DMP Post-Doctoral Travel Awards will be presented at the DCMP/DMP New Fellows and Award Winners Reception, Tuesday, March 14, 5:30 p.m. (Place to be announced).

The recipients of the 2017 DMP Post-Doctoral Travel Awards are:
### Award and Prize Winners

#### James C. McGroddy Prize for New Materials

**Paul C. Canfield**, Iowa State University

“For development and use of solution growth of single crystalline intermetallic materials to design, discover, and elucidate new heavy fermion, superconducting, magnetic, and quasicrystalline states.”

#### David Adler Lectureship Award

**Heike E. Riel**, IBM Research – Zurich

“For seminal achievements in the science and technology of nanoscale electronics, particularly the exploration of novel materials such as semiconducting nanowires, molecules and organic materials for future nanoscale devices, and outstanding presentations and outreach for general audiences.”

#### IUPAP Young Scientist Prize in the Structure and Dynamics of Condensed Matter (C10)

**Dr. Cui-Zu Chang**, Francis Bitter Magnet lab, Massachusetts Institute of Technology,

“For the discovery of quantum anomalous Hall effect in magnetically doped 3D topological insulator films.”

#### Richard L. Greene Dissertation Award in Experimental Condensed Matter or Materials Physics

**Deep Jariwala**, Northwestern University

“For insightful work in the processing, properties and applications of heterostructure devices from low-dimensional materials.”

**Liang Wu**, University of California, Berkeley

“For insightful experiments on the electrodynamic response of topological insulators and the discovery of the topological magneto-electric effect.”
2016 APS Fellows nominated through DMP:

Yong P. Chen, Purdue University
Citation: For significant contributions to the material physics of chemical vapor deposition; and to the development of intrinsic 3-D topological insulators with transport dominated by Dirac surface states.

Kyeongjae Cho, University of Texas at Dallas
Citation: For seminal contributions to the development and application of first principles methods in the study of nanoscale materials, and the application of rational material design approaches to develop metal alloy and transition metal oxide catalysts for clean energy technology.

Hongyou Fan, Sandia National Laboratories
Citation: For pioneering contributions to the development of novel synthesis methods and self-assembly processes to fabricate nanostructured materials for nanoelectronic and nanophotonic applications.

Anderson Janotti, University of Delaware
Citation: For outstanding and original contributions to the fundamental understanding of defect physics and doping in wide-band-gap semiconductors through first-principles methods.

Ezekiel Johnston-Halperin, The Ohio State University
Citation: For pioneering studies of the magnetic, spintronic, and electronic properties of organic and inorganic materials, including groundbreaking work with organic based ferromagnets.

Mercouri Kanatzidis, Northwestern University
Citation: For the discovery of new materials with exceptional properties, and for developing pioneering materials physics concepts in the design of nanostructured thermoelectric materials that convert waste heat to electricity with breakthrough performance characteristics.

Ho Nyung Lee, Oak Ridge National Laboratory
Citation: For pioneering contributions in achieving atomic-scale growth control in pulsed laser deposition, and for significant advances towards discovery of functional oxide materials by epitaxial design of thin films and heterostructures.

Jianwei "John" Miao, University of California, Los Angeles
Citation: For pioneering contributions to the development of diffractive imaging methods for characterizing a wide range of material systems and a general electron tomography method for three-dimensional imaging of crystal defects at atomic resolution.

Ganpati Ramanath, Rensselaer Polytechnic Institute
Citation: For creative approaches to realize novel properties in bulk nanomaterials fabricated from nanocrystal building blocks and molecularly-tailored interfaces; and uncovering atomistic and electronic structure-level mechanisms of property enhancements.
Athena S. Sefat, Oak Ridge National Laboratory
Citation: For major contributions in developing new and pure iron-based superconducting crystals, and advancing the understanding of structure-composition-property relations on multi-length scales in high temperature superconductors and antiferromagnets.

Jonathan E. Spanier, Drexel University
Citation: For outstanding contributions to advancing understanding of light-matter interactions, ferroelectric phase stability, and nanoscale phenomena in semiconductors, ferroelectrics and related oxides, interfaces and surfaces, including hot carrier behavior, Raman scattering, and photovoltaics.

Haiyan Wang, Purdue University
Citation: For innovations in nanostructured materials and their application in multifunctional ceramic composites and hybrid materials, high temperature superconductors, thin film solid oxide fuel cells, and in situ transmission electron microscopy; and for exceptional potential in inspired education and future leadership.

James A. Warren, National Institute of Standards and Technology – Gaithersburg
Citation: For seminal contributions to the modeling of microstructural development in a broad range of materials.

Qikun Xue, Tsinghua University
Citation: For transformational development of atomic-level controlled thin film growth, to elucidate fundamental new physics.

Judith C. Yang, University of Pittsburgh
Citation: For seminal contributions to in situ environmental transmission electron microscopy, the fundamental understanding of metal oxidation, and the application of nanomaterials and catalysis.

March Meeting: Public Outreach
Q3.00001: The Physics and Materials Science of Superheroes
JAMES KAKALIOS, University of Minnesota
Wednesday, March 15, 2017
6:30PM - 7:30PM

While physicists, engineers and materials scientists don't typically consult comic books when selecting research topics; innovations first introduced in superhero adventures as fiction can sometimes find their way off the comic book page and into reality. As amazing as the Fantastic Fours powers is the fact that their costumes are undamaged when the Human Torch flames on or Mr. Fantastic stretches his elastic body. In shape memory materials, an external force or torque induces a structural change that is reversed upon warming, a feature appreciated by Mr. Fantastic. Spider-Mans wall crawling ability has been ascribed to the same van der Waals attractive force that gecko lizards employ through the millions of microscopic hairs on their toes. Scientists have developed “gecko tape, consisting of arrays of fibers that provide a strong enough attraction to support a modest weight (if this product ever becomes commercially available, I for one will never
wait for the elevator again!). All this, and important topics such as: was it “the fall or “the webbing that killed Gwen Stacy, Spider-Mans girlfriend in the classic Amazing Spider-Man # 121, and the chemical composition of Captain Americas shield, will be discussed. Superhero comic books often get their science right more often than one would expect!

March Meeting: DMP Sponsored Symposia & Special Events

DMP Invited Symposia
C19  DMP/GMAG Awards Session  Kate Ross, George Valley Jr. Prize; Paul Canfield, McGroddy New Materials Prize ; Deep Jariwala, Greene Dissertation Prize; Liang Wu, Greene Dissertation Prize; Heike Riel, David Adler Lectureship Award
L22. Physics For Everyone  (Marc Walton, Pupa Gilbert, Charles Falco, Paul Helpern, Volker Rose)
S24. Progress in Physics Inspired by Walter Kohn  (Qian Niu, Ben Murdin, Kieron Burke, Matthias Scheffler, Giulia Galli)

Graduate Student Lunch with the Experts
Sponsoring Units: APS units at the meeting, Room: TBA, Tues., March 14, 12:30 - 2:00PM
Students may sign up (in registration area) on site to enjoy a complimentary box-lunch while participating in an informal discussion with an expert on a topic of interest to them.
DMP Supported Tables include:
- Michelle Johannes, Naval Research Labs “Extracting materials properties from first principles: what we get right and what goes wrong”
- Liang Fu, MIT "Topological quantum materials"
- Oana Jurchesku, Wake Forest University "A Balancing Act: A Family and a Career in Science"

DCMP/DMP New Fellows & Award Winners Reception
Tuesday, March 14, 5:30 p.m. - 7:00 p.m New Orleans Marriott, Mardi Gras Ballroom Salon ABCD (3rd Floor)
DMP: McGroddy Prize, Adler Award, Greene Dissertation Awards, DMP Nominated APS Fellows, Ovshinsky Student Travel Awards, DMP Post-Doctoral Travel Awards
DCMP: Buckley Prize, Onsager Prize, Lilienfeld Prize, Davisson-Germer Prize, Isakson Prize, DCMP Nominated APS Fellows

DMP Business Meeting
Tuesday, March 14, 7:00-8:00pm, New Orleans Marriott, Bacchus Room (4th Floor)

DMP Focus Topic Sessions:
Session A
A1. Computational Discovery and Design of Novel Materials I
A7. Computational Physics at the Petascale and Beyond I
A11. Organic Electronics - Excited States and Energy Transfer
A28. Dopants and Defects in Semiconductors I: Quantum Information
A30. Graphene: Structure, Defects, and Functionalization
A31. Carbon Nanotubes and Related Materials: Transport and Devices
A32. Devices from 2D Materials
A33. Excitons in 2D Semiconductors
A34. Hybrid Organic-Inorganic Halide Perovskites II
A36. Quantum Dots, Quantum Wells, and Metamaterials: Optical Characterization and Applications
A37a. Complex Oxide Interfaces and Heterostructures - LaAlO3/SrTiO3
A38. Fe-based Superconductivity I
A43. Spin Orbit Physics in Oxides I
A44. Dirac and Weyl Semimetals: Transport I
A45. 2D Topological Superconductors
A47. Magnetization Dynamics I: Ultrafast and Switching
A48. Frustrated Magnetism: Kitaev Model
A50. Low-D and Molecular Magnetism I

Session B
B1. Computational Discovery and Design of Novel Materials II
B7. Computational Physics at the Petascale and Beyond II
B30. Emerging 2D Materials: Phosphorene, Silicene, and Beyond
B32. Field Effect Devices from 2D Materials
B33. Valley and Spin Dependent Properties
B34. Thermoelectrics - Sn-Se and Modeling
B35. Experimental Techniques and Results: Static High Pressure Physics
B36. Electronic and Transport Phenomena of Nanostructures I
B37a. Complex Oxide Interfaces and Heterostructures - Ruthenates, LaAlO3/SrTiO3
B38. Fe-based Superconductors: Nematicity I
B42. Organic Spintronics
B43. Magnetic Spinel and Binary Oxide Films
B44. Session Dirac and Weyl Semimetals: ARPES, STM and Theory
B45. Topological Materials: Thin Film
B47. Antiferromagnetic Heterostructures and Magnon Drag
B48. Frustrated Magnetism: Spinels, Pyrochlores, and Frustrated 3D Magnets I
B50. Magnetism in Curved Nanostructures and Nanowires

Session C
C1. Computational Discovery and Design of Novel Materials III
C2. Materials in Extremes I
C7. Computational Physics at the Petascale and Beyond III
C28. Dopants and Defects in Semiconductors II: Oxides
C30. Emerging 2D Materials Beyond Graphene
C32. 2D Atomic Layer Hetero-devices
C33. Excitons in Heterostructures
C34. Thermal and Thermoelectric Transport - Theory and Modeling
C36. Electronic and Transport Phenomena of Nanostructures II
C37a. Dielectric and Ferroelectric Oxides I
C39. Fe-based Superconductors: Tunneling and Spectroscopy
C43. Multiferroic Oxides I
C44. Dirac and Weyl Semimetals: Theory I
C47. Damping and Spin Polarization in Heusler Alloys
C48. Spin and Valley Dynamics in TMDs
C50. Low-D and Molecular Magnetism II

Session E
E1. Computational Discovery and Design of Novel Materials IV
E2. Materials in Extremes II
E7. First-Principles Modeling of Excited-State Phenomena I: Methodological Advances
E11. Organic Electronics - Applied Transport
E28. Dopants and Defects in Semiconductors III: Complex Oxides
E30. 2D Materials: Processing and Application
E31. Graphene: Dopants, Adatoms, and Adsorbates
E32. 2D Complex Oxide Devices and Devices at Oxide Interfaces
E34. Hybrid Organic-Inorganic Halide Perovskites III
E35. Experiments and Results at High Pressure, Static and Dynamic
E37a. Dielectric and Ferroelectric Oxides II
E39. Fe-based Superconductivity - 122 Structure Materials
E42. Magnetic Materials for Semiconductor Spintronics
E43. Spin Orbit Physics in Oxides II
E44. Dirac and Weyl Semimetals: Optics I
E45. Topological Materials: Synthesis and Characterization -- Magnetic Thin Film
E47. Frontiers in Magnetic Imaging
E48. Frustrated Magnetism: Pyrochlores
E50. Magnetic Nanoparticles and Nanostructures

Session F
F1. Computational Discovery and Design of Novel Materials V
F2. Materials in Extremes III
F7. First-Principles Modeling of Excited-State Phenomena II: Computational Advances
F28. Dopants and Defects in Semiconductors IV: Nitrides
F30. 2D Materials: Properties and Characterization
F31. Quantum Transport
F32. Optoelectronic Devices from 2D Materials
F34. Thermal Transport
F35. Surface Science of Organic Molecular Solids, Films, and Nanostructures I
F37a. Complex Oxide Interfaces and Heterostructures - Stannates, Superconductivity
F42. Spin Transport in Quantum Dots and Nanowires
F43. Multiferroic Oxide Heterostructures
F44. Dirac and Weyl Semimetals: STM
F45. Realization of Kitaev Chain
F47. Spin-Orbit Torque I
F48. Frustrated Magnetism: Triangular Lattices
F50. Spin-Orbit Mediated Chiral Spin Textures I

Session H
H1. Computational Discovery and Design of Novel Materials VI
H2. Materials in Extremes IV
H7. First-Principles Modeling of Excited-State Phenomena III: TDDFT
H11. Organic Electronics - Organic Photovoltaics
H30. Magnetism in 2D Materials I
H31. Properties of Bilayer Graphene
H32. Excitonic Devices from 2D Materials
H34. Thermal Transport - Photonic and Nano Effects
H37a. Dielectric and Ferroelectric Oxides III
H41. Fe-based Superconductors: FeSe
H43. Multiferroic Oxides II
H44. Dirac and Weyl Semimetals: Theory II
H45. Topological Josephson Junction
H47. Spin Seebeck and Spin Nemst Effects
H48. Single-Spin Systems in Semiconductors
H50. Single-Molecule Magnets and Q-bits

Session K
K1. Van der Waals Bonding in Advanced Materials I
K2. Materials in Extremes V
K7. First-Principles Modeling of Excited State Phenomena IV: Molecular Systems and Singlet Fission
K11. Organic Electronics - Processing, Structure, Function
K15. Complex phases: Colloids and Quasicrystals
K28. Dopants and Defects in Semiconductors V: Solar and Detector Materials
K30. Transition Metal Dichalcogenides: Processing and Applications
K31. THz and Ultrafast Measurements in 2D Materials
K32. Phosphorus Devices and Device Physics
K33. Computational Discovery and Design of Novel Materials VIII
K34. Hybrid Organic-Inorganic Halide Perovskites I
K36. Novel Photonic and Optical Phenomena in Nanostructured Materials
K37a. Complex Oxide Interfaces and Heterostructures - Oxide 2-DEGs
K43. Spin Orbit Physics in Oxides III
K44. Dirac and Weyl Semimetals: Transport II
K45. Topological Materials: Synthesis and Characterization -- Other Materials
K47. Magnons and Magnonic Devices
K48. Spin Transport in Topological Insulators
K50. Nanomagnets

Session L
L1. Van der Waals Bonding in Advanced Materials II
L2. Materials in Extremes VI
L7. First-Principles Modeling of Excited State Phenomena V: Low-Dimensional Systems
L16. Superconductivity: Spin Triplet
L28. Dopants and Defects in Semiconductors VI: Compound and 2D Semiconductors
L30. Transition Metal Dichalcogenides: Synthesis and Characterization
L31. Superconductivity and Correlated States in 2D Materials I
L32. 2D Materials and Device Characterizations
L33. Graphene: Synthesis and Nanoribbons
L34. Thermal Transport Modeling - Novel Approaches
L37a. Dielectric and Ferroelectric Oxides IV
L37b. Complex Oxide Interfaces and Heterostructures - Nickelates, Vanadates and VO2
L39. Fe-based Superconductors: Orbital Effects and Nematicity
L43. Manganites and Cobaltites
L44. Dirac and Weyl Semimetals: ARPES
L45. Superconducting Topological Insulator
L47. Spin-Orbit Torque II
L48. Frustrated Magnetism: Spin Ice
L49. Valley, Spin and Topological Physics
L50. Spin-Orbit Mediated Chiral Spin Textures II
Session P
P1. Van der Waals Bonding in Advanced Materials III
P2. Materials in Extremes VII
P7. First-Principles Modeling of Excited State Phenomena VI: Semiconductors and Oxides
P23. Novel 2D Semiconductors
P28. Dopants and Defects in Semiconductors VII
P30. Transition Metal Dichalcogenides: Optical Properties
P31. Magnetism in 2D Materials II
P32. Mechanical Properties and Micromechanical Devices from 2D Materials
P34. Nanoscale Charge Transport
P35. Surface Science of Organic Molecular Solids, Films, and Nanostructures II
P37a. Dielectric and Ferroelectric Oxides V
P41. Fe-based Superconductors: Theory and Computational
P42. Spin Transport in Graphene
P43. Manganite Films
P44. Dirac and Weyl Semimetals: Theory III
P45. Majorana Nanowire Based Topological Devices
P47. Spin Transport and Topology
P48. Frustrated Magnetism: Quantum Spin Ice
P50. Spin Chains and Quasi-Low-D Molecular Magnets

Session R
R1. Van der Waals Bonding in Advanced Materials IV
R2. Materials in Extremes VIII
R7. First-Principles Modeling of Excited State Phenomena VII: Phonons and Electron Dynamics
R30. Transition Metal Dichalcogenides: Structure and Defects
R31. Nanoribbons: Graphene and Beyond
R32. Computational Discovery and Design of Novel Materials IX
R33. Advanced Spectroscopy
R34. Nanostructures and Metamaterials
R36. Optical Spectroscopic Measurements of 2D Materials
R37a. Dielectric and Ferroelectric Oxides VI
R39. Fe-based Superconductors: Nematicity II
R42. Spins in Semiconductors, Hyperfine and Spin-Orbit Coupling
R43. Magnetic Oxide Interfaces
R44. Dirac and Weyl Semimetals: Optics II
R45. Exotic Topological Superconductors
R47. Spin-Orbit Torque III and Chiral Domain Walls
R48. Frustrated Magnetism: Kagome
R50. Artificial Spin Ice and Honeycomb Structures

Session S
S2. Materials in Extremes IX
S7. Theory and Simulation of Fiber-Based Materials
S30. 2D Materials Modeling of Synthesis and Defects
S31. Superconductivity and Correlated States in 2D Materials II
S32. Computational Discovery and Design of Novel Materials X
S33. Structural and Electronic Properties
S34. Plasmonics
S35. Surface Science of Organic Molecular Solids, Films, and Nanostructures III
S37a. Complex Oxide Interfaces and Heterostructures - Defects at Oxide Interfaces
S43. Electric Field and Optical Effects in Magnetic Oxide Heterostructures
S44. Dirac and Weyl Semimetals: Theory IV
S45. Transport Signature of Majorana Nanowires
S47. Magnetization Dynamics II, Metals and Insulators
S48. Frustrated Magnetism: Spin Liquids II
S50. Molecular Magnets: STM, Ad-atoms, Interfaces

Session V
V1. 2D Electronic Devices and Device Physics
V30. Photoluminescence and Polarons in 2D Materials
V31. Superconductivity and Correlated States in 2D Materials III
V32. Computational Discovery and Design of Novel Materials XI
V34. Advanced Metamaterials
V37a. Dielectric and Ferroelectric Oxides VII
V37b. Session Topological Materials: Theory and Modeling
V41. Fe-based Superconductivity, Spectroscopies
V42. Spin Transport in Low-Dimensional Systems
V43. Iridate Heterostructures
V44. Dirac and Weyl Semimetals: Theory V
V45. Quantum Hall Effect and Superconductivity
V47. Magnetization Dynamics II, Damping and Spin Pumping
V48. Frustrated Magnetism: Spin Liquids
V50. Skyrmions

Session X
X30. Transport and Noise in 2D Materials
X31. 2D Materials: Synthesis, Structure, and Properties
X32. Computational Discovery and Design of Novel Materials XII
X34. Plasmonic Metamaterials
X37a. Complex Oxide Interfaces and Heterostructures VII
X41. Fe-based Superconductivity: Magnetic Excitations
X42. Spin Transport in III-V and Group IV Semiconductors
X43. Defects and Structural Control in Magnetic Oxide Heterostructures
X44. Dirac and Weyl Semimetals: Transport III
X45. Two-Dimensional Topological Superconductors: II
X47. Domain Wall Motion
X48. Frustrated Magnetism: 2D Antiferromagnets
X50. Nanoscale Magnetic Dynamics

Session Y
Y26. Fe-based Superconductivity: FeSe Monolayers
Y30. Properties of Multilayer 2D Materials and Heterostructures
Y31. Magnetism, Superconductivity, and Spin-Orbit Effects in 2D Materials
Y32. Computational Discovery and Design of Novel Materials XIII
Y33. 2D Semiconductor Electronic Devices
Y34. Quantum Effects in Plasmonic Metamaterials
Y36. Thermoelectrics: Characterization, Nanostructures
Y37a. Dielectric and Ferroelectric Oxides VIII
Y41. Fe-based Superconductivity. C_4 and other Subjects
Y42. Solid-State Hole Spin Qubits
Y43. Bulk Oxides
Y45. Topological Superconductivity: Theory
Y47. Spin Transfer Torque and Magnetic Tunnel Junctions
March Meeting: Pre-meeting Workshops

**DPOLY Short Course on Polymer Colloids: Synthesis, Characterization and Application**
Saturday, March 11, 1:00 pm - 6:00 pm, Room 288
Sunday, March 12, 8:30 am - 6:00 pm, Room 288

**Finding Your Scientific Voice: Improving Your March Meeting Presentation**
March 12, 9:00 am -12:00pm, and 1:30 pm- 4:30 pm, Room 287

**Communication and Negotiation Seminar for Women**
March 12, 4:00 pm- 6:00 pm, Room 297

**First-Time Attendee Orientation**
March 12, 6:00 pm- 7:00 pm, New Orleans Marriott Salon D

**Future of Physics Days Undergraduate Meet and Greet**
March 12, 7:00 pm- 8:30 pm, New Orleans Marriott Salon D

**Official Tweetup**
Sunday, March 12, 7:30 pm - 9:00 pm
Barcadia, 601 Tchoupitoulas Street, New Orleans, Louisiana 70130

March Meeting: Tutorials

Sunday, March 12

**Morning Tutorials**, Convention Center, 8:30 a.m. - 12:30 p.m.

**Tutorial #1: Quantum Photonics** *(Room 292)*
Instructors: Darrick Chang, ICFO, Javier Garcia de Abajo, ICFO-Spain, Mikhail Lukin, Harvard University, Vlad Shalaev, Purdue University

**Tutorial #2: Electron Phonon Interactions** *(Room 289)*
Instructors: Feliciano Giustino, Oxford University, Chris G. Van de Walle, University of California, Santa Barbara, Carsten Ullrich, University of Missouri, Mark van Schilfgaarde, King’s College

**Tutorial #3: Topological Insulators** *(Room 293)*
Instructors: B. Andrei Bernevig, Princeton University, Piers Coleman, Rutgers University, Çagliyan Kurdak, University of Michigan, Ann Arbor, Nitin Samarth, Penn State Univ.

**Tutorial #4: Current Research in Many-Body Localization** *(Room 290)*
Instructors: Vadim Oganesyan, City University of New York, New York, Sarang Gopalakrishnan, City University of New York, New York, David Luitz, Technical University of Munich, Germany, Ulrich Schneider, Cambridge University, Cambridge

**Afternoon Tutorials**, Convention Center, 1:30 p.m. - 5:30 p.m.

**Tutorial #5: Weyl Semi-metals** *(Room 293)*
Instructors: Andrei Bernevig, Princeton University, Anton Burkov, Univ. of Waterloo, Nai Phuan Ong, Princeton University, Siddharth Parameswaran, Univ. of California at Irvine
Tutorial #6: Computation in the undergraduate curriculum (Room 290)
Instructors: Danny Caballero, Michigan State University, Norman Chonacky, Yale University, Larry P. Engelhardt, Francis Marion University, Robert Hilborn, American Association of Physics Teachers, Marie Lopez del Puerto, University of St. Thomas, Kelly Roos, Bradley University

Tutorial #7: Topological Physics with Cold Atoms (Room 292)
Instructors: Wolfgang Ketterle, Massachusetts Institute of Technology, Ian Spielman, National Institute of Standards and Technology, Christof Weitenberg, University of Hamburg, Hui Zhai, Tsinghua University

Tutorial #8: Active Matter (Room 289)
Instructors: Sriram Ramaswamy, TCIS, Hyderabad, India, Tom Powers, Dept. of Physics, Brown U., Aparna Baskaran, Dept of Physic, Brandeis University

March Meeting: Editorial Events:

Meet the APS Editors Reception & Coffee Break
Reception: Convention Center, TBD; Tuesday, March 14, 4:30 – 6:00 pm, Hall I-2
Coffee Break: Convention Center, TBD; Wednesday, March 15, 10:45 - 11:30 am, Hall J

The editors of the APS journals invite you to join them for a reception and a coffee break. The editors will be available to answer questions, hear ideas, and discuss comments about the journals.