A Note from the Chair:

Dear DCMP Community,

On a Friday evening mid-March this year, I watched Star Wars characters bursting balloons with lasers followed by a Mexican folkloric dance group gracefully swirling and balancing lit candles—an exploration of Light. We were at the "Physics Fiesta", a culminating APS March Meeting event at the Solorio Academy High School in the South Side of Chicago, hosted by DCMP and the Forum on Outreach and Engaging the Public. Attendees visited booths where physicists in wacky hats performed demonstrations, such as racing levitating pucks around superconducting tracks, and answered queries on science, career, and life. Over five-hundred attendees spanning three generations, vibrant youth in action, and science coming alive, an apt finale that reflected the excitement we physicists shared together over the past week and a gift for current times.

Through the pandemic, national challenges, wars, and more, through all the hardship, the physics community has persevered.

Warm greetings to you all in our wonderful community. In this Newsletter, we share a fraction of DCMP-related happenings with you. In this year’s hybrid March Meeting of over ten thousand attendees, resurrecting the in-person component required tireless coordination between the APS Meetings team and many units including our own, more so than usual. The APS is now extensively working on finding a harmonious balance of in-person and virtual components for future meetings. As ever, the meeting showcased a bounty of marvelous research. To mention but a few themes—the profound influence of strong correlations in bilayer graphene, topological materials, and heavy fermionic systems; spin-orbit coupling in crystals from its days of foundational discoveries to its modern guises; new twists on many-body localization, thermalization, and ergodicity; playgrounds created by synthetic structures to realize topological superconductivity, spin-ice, and non-equilibrium phases; and signatures of anyons waltzing around one another. In partnership with sister units, condensed matter continues to grow in its interdisciplinary directions from atomic physics and quantum information to materials research to biophysics to cosmology. The meeting had special sessions for prizes, outreach events, and several sessions reflecting current societal issues. After the pandemic hiatus, what a joy to have witnessed the profusion of science, the forming of new connections, the brainstorming, the mentoring, and the caring. I hope you can join us next year in celebrating physics at the upcoming March Meeting in Las Vegas!

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The APS 2023 March Meeting will be held in Las Vegas NV from Monday, March 6 to Friday, March 10, 2023. The meeting will be held at the Caesar’s Forum Convention Center, with Harrah’s Las Vegas as the headquarters hotel. DCMP will organize about 30 of the 100+ Invited Sessions. There will be over 50 parallel sessions. The complete bulletin will be available only in electronic form.

Important Dates & Deadlines
Invited Symposium Nomination Deadline: August 5, 2022; 5:00pm EST
Contributed and Poster Abstracts Opens: August 15, 2022; 5:00pm EST, Closes October 20, 2022

Invited Symposium Nominations
The success of the March Meeting rests largely on the quality of the invited symposia which in turn depends on your participation by submitting excellent nominations. The nomination submission portal was open on July 7 and closes on August 5, 2022, 5pm. The link to the portal is here: https://PHYSICS.planion.com/Z?8668083L3.

A major role of DCMP is to organize Invited Symposia (about 30 of them). According to DCMP bylaws, the speakers are drawn from member nominations. Please create your symposium nomination, and then go to the link above to enter it into the database. The symposia are selected from the nominations by the DCMP Executive Committee. Historically, the success rate of a proposal is ~ 50% of the ~ 60 submitted. The Executive Committee as a whole selects invited talks only from those proposed by the community. It cannot substitute speakers of its own choosing.

You are allowed/encouraged to submit joint nominations for invited sessions with other APS units when submitting to DCMP. At the nomination stage symposia can only be cosponsored by two units and each is ‘charged’ as half a symposium (e.g. DCMP could have 30 sole sponsored symposia, or 15 sole sponsored and 30 co-sponsored).

A person cannot give technical invited talks in two consecutive years. A list of people that gave technical invited talks in 2022, and are therefore ineligible for 2023, can be found here: https://secure.aps.org/aps-web/meetings/march/reports/mar22speakers.cfm

Notes regarding nominations:
1. All nominations must be submitted through the APS nominations site by August 5, 2022. An invited session of invited speakers should be submitted as an "Invited Symposium Nomination". An invited session consists of 5 speakers. You should include 1-2 alternate speakers in your nomination, in the event that one of the original 5 nominees does not work out.

2. Although invited speakers will be guaranteed placement in the program only after all nominations have been reviewed and final selections are made, you must obtain confirmation of interest to present if selected from all of your nominated speakers. On the nomination page there is a box with the choices Notified, Accepted, Tentatively Accepted, No Contact. Preference will be given to symposia and speakers in the order, Accepted, Tentatively Accepted, Notified, No contact. If a speaker is nominated for more than one symposium accepted should be chosen for the first choice and tentatively accepted for the later choices.

3. A person cannot give technical invited talks in two consecutive years. A list of people that gave technical invited talks in 2022, and are therefore ineligible for 2023, can be found here: https://secure.aps.org/aps-web/meetings/march/reports/mar22speakers.cfm

4. Nominations of women, members of underrepresented minority groups, and scientists from outside the United States are especially encouraged.

5. Be sure to select a DCMP Category for your symposium nomination. Note that 15 is new sorting category. DCMP categories are:

07 TOPOLOGICAL MATERIALS (DCMP)
09 SUPERCONDUCTIVITY (DCMP)
10 MAGNETISM (DCMP)
11 STRONGLY CORRELATED SYSTEMS, QUANTUM FLUIDS AND SOLIDS (DCMP)
12 COMPLEX STRUCTURED MATERIALS, INCLUDING GRAPHENE (DCMP)
13 SUPERLATTICES, AND OTHER ARTIFICIALLY STRUCTURED MATERIALS (DCMP)
14 SURFACES, INTERFACES, THIN FILMS and METALS (DCMP)
15 NONEQUILIBRIUM QUANTUM PHYSICS (DCMP)
Suggestions for Creating a Successful Proposal

Propose a symposium on a timely topic with five excellent talks.
Generally the Executive Committee favors symposia (preferably with five talks, rather than fewer) over individual invited talks. There are very few of the latter.

Choose an appropriate title and provide a clear justification.
This will aid the committee in making its decision.

Choose titles of individual talks carefully.
The speaker can revise the title later, but it is important to have the topic and intent of the presentation stated clearly.

Provide an informative abstract for each talk.
This will underpin the central theme of the symposium and aid the committee in reaching a decision. Speakers who are invited will be asked to submit their own abstracts later.

Provide references to publications.
This will aid the committee in determining whether the work is current and whether it has some level of acceptance by the scientific community. Electronically posted preprints are useful, though they do not have the same status as refereed publications.

Include an alternate speaker.
It is important to provide a substitute (or two) in the event that someone becomes unavailable. Please ask the alternate (like the main choices) to confirm availability.

Enter the proposed symposium under a relevant sorting category.
This will ensure that the correct subcommittee examines the proposal.

Example of Proposal for an Invited Symposium graciously provided by DCMP Past Chair David Campbell

A. Symposium/Focus Session Title:
Intrinsic Localized Modes: Recent Developments and Future Perspectives

B. Organizer(s):
Name: David Campbell
Affiliation: Boston University

Name: Panos Kevrekidis
Affiliation: UMass, Amherst

C. Description of session (one paragraph to at most one page):
Intrinsic localized modes (ILMs) have received considerable attention during the past two and a half decades since their theoretical prediction. ILMs are (typically) exponentially localized in space, temporally periodic states that emerge under rather generic conditions in nonlinear dynamical lattices. In the past twenty-five years, ILMs have been observed in many diverse experimental systems and to play robust roles in the systems' dynamics. These range from arrays of nonlinear-optical waveguides to Bose-Einstein condensates (BECs) in periodic potentials, and from micro-mechanical cantilever arrays to Josephson-junction ladders. Additional areas of application include (but are not limited to) granular crystals of beads interacting through Hertzian contacts, layered antiferromagnetic crystals, as well as halide-bridged transition metal complexes, and dynamical models of double-stranded DNA.

In this invited symposium, we intend to assemble a series of experts on the subject of Intrinsic Localized Modes, such as Sergej Flach (Massey, New Zealand), Yuri Kivshar (ANU, Canberra), Al Sievers (Cornell), Mason Porter (Oxford), Demetri Christodoulides (UCF) and Ragnar Fleischmann (MPI-DS, Göttingen) or Tsampikos Kottos (Wesleyan). These researchers, who are all at the forefront of the field, would summarize developments in optics (Christodoulides), Materials Science (Sievers), physics application areas such as graphene and metamaterials (Kivshar, Flach) and Bose Einstein Condensates (Fleischmann/Kottos), as well as mathematical aspects (Porter) and indicate challenges ahead within the next decade of studies in this versatile and multifaceted theme of research. We feel that this would be a very interesting and timely symposium for both seasoned but also more junior researchers (including postdocs and graduate students) within Nonlinear Science.

(continued page 4)
We realize that invited symposia have only five speakers, but we have proposed 7 slots (with some viable alternates) because not all of the speakers may be available. We have listed below our first five prospects and have obtained tentative commitments from most of them. The remain two would be contacted in the case of cancellations from among the first five.

We offer the following as a brief summary of the accomplishments of the first five proposed participants:

Sergej Flach has been one of the pioneers of the study of intrinsic localized modes both in numerous applications (including Josephson junctions and generally condensed matter systems), but also from a fundamental perspective of examining methodological questions of their computation, their stability and bifurcations, their extensions to Fourier space, and more recently their interplay with disorder.

Yuri Kivshar has dedicated a significant fraction of his career studying localized modes in many different areas of application. Aside from his theoretical and computational work, he has pioneered experimental investigations of such modes in nonlinear optics (waveguide arrays and photorefractives), in atomic BECs, in metamaterials and split-ring resonators and more recently he has turned his attention also to graphene and related media.

Al Sievers was among the very first proposers of ILMs in anharmonic lattices. He has contributed tremendously in the experimental detection of such modes including studies using neutron scattering and related techniques, examinations of ferromagnetic and antiferromagnetic media and also more recently lattices of cantilevers where a tremendous amount of control could be imposed over these states.

Mason Porter has worked extensively on localized modes in different types of models from a more mathematical perspective, both in the realm of nonlinear Schrödinger and discrete nonlinear Schrödinger equations, as well as in contexts of FPU type. In fact, his most recent studies along the latter direction involve the rather novel theme of granular crystals, which holds particular promise for future, well controlled experimental studies of ILMs.

Demetri Christodoulides has been, arguably, the first proposer of ILM-bearing models in the context of nonlinear optics. He has since made a wide range of highly impactful and pioneering contributions towards the realization of different types of localized modes (one- and multi-dimensional, one- and multi-component, soliton- and vortex-type) in optical media, most recently focusing on realizations of PT-symmetry and its applications in optics.

D. For each invited speaker:

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sergej Flach</td>
<td>Massey University, New Zealand</td>
</tr>
<tr>
<td>Al Sievers</td>
<td>Cornell University</td>
</tr>
<tr>
<td>Yuri Kivshar</td>
<td>Australian National University, Australia</td>
</tr>
<tr>
<td>Mason Porter</td>
<td>Oxford University, UK</td>
</tr>
<tr>
<td>Demetri Christodoulides</td>
<td>University of Central Florida</td>
</tr>
</tbody>
</table>

E. Co-Chairs of session: David Campbell and Panos Kevrekidis
DCMP Sponsored/Co-sponsored Prizes For 2022

Oliver E. Buckley Condensed Matter Physics Prize
Emmanuel I. Rashba, Harvard University
Gene Dresselhaus, Massachusetts Institute of Technology*
"For pioneering research on spin-orbit coupling in crystals, particularly the foundational discovery of chiral spin-orbit interactions, which continue to enable new developments in spin transport and topological materials."

* We are saddened that our colleague Gene Dresselhaus passed before receiving the award. (Physics Today 75, 6, 59 (2022); https://doi.org/10.1063/PT.3.5025)

Lars Onsager Prize
Boris Altshuler, Columbia University
David A. Huse, Princeton University
Igor L. Aleiner, Columbia University; Google Quantum AI
"For foundational work on many-body localization, its associated phase transition, and implications for thermalization and ergodicity."

Frank Isakson Prize for Optical Effects in Solids
Manfred Fiebig, Department of Materials ETH Zurich
"For pioneering nonlinear optical spectroscopy studies that led to a fundamental understanding of the emergence and coupling of electric and magnetic orders at the level of domains and domain walls."

Richard L. Greene Dissertation Award in Experimental Condensed Matter or Materials Physics
Yuan Cao, Harvard University
"For pioneering discoveries of strongly correlated physics in twisted bilayer graphene."

IUPAP C10 Young Scientist Prize in the Structure and Dynamics of Condensed Matter
Alexander Swinton McLeod, School of Physics and Astronomy University of Minnesota Twin Cities
"For his contributions to nano-imaging and -manipulation of correlated electron phase transitions, and for fundamental studies of polaritons at low temperatures."

Davisson-Germer Prize in Atomic or Surface Physics
David S. Weiss, Penn State
"For pioneering contributions to the experimental realization of strongly interacting one-dimensional Bose gases and groundbreaking studies of their quantum dynamics, and for contributions to quantum computing with neutral atoms in optical lattices."

For more information, please visit:
https://engage.aps.org/dcmp/honors/prizes-awards

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

Deadline: Wednesday, August 31, 2022

This award recognizes doctoral thesis research of exceptional quality and importance in experimental condensed matter or experimental materials physics. The annual award consists of $3000, a certificate, travel reimbursement up to $1000, and a registration waiver to attend to give an invited talk and accept the award at APS March Meeting.

Nominations must be submitted to the Award Selection Committee prior to the deadline for the nominations. The deadline for nominations is typically September 1st of the year preceding the March Meeting where the award is presented. Nominations of qualified women and members of underrepresented minority groups are especially encouraged. This award will be based on the dissertation itself and not the subsequent work.

For more information please visit:
https://www.aps.org/programs/honors/prizes/greene.cfm

APS Medal and Society Prizes Ceremony Honorees

APS Medal for Exceptional Achievement in Research
Elliot H. Lieb, Princeton
“For major contributions to theoretical physics through obtaining exact solutions to important physical problems, which have impacted condensed matter physics, quantum information, statistical mechanics, and atomic physics.”

Julius Edgar Lilienfeld Prize
Chang Kee Jung, Stony Brook University
“For outstanding contributions and leadership in experimental neutrino physics, and for outstanding teaching and outreach, especially on the physics of sports.”

George E. Valley, Jr. Prize
Andrew Lucas University of Colorado Boulder
“For pioneering contributions to developing the theory of hydrodynamic transport in interacting electron fluids.”

For more information, please visit:
https://leadership.aps.org/events/aps-medal-and-society-prize-ceremony
Cristiano Ciuti
Université de Paris, France
Citation: For pioneering theoretical work on the quantum electrodynamics of strongly-coupled photons and electrons, and the dynamics of correlated quantum polariton superfluids.

José María De Teresa
Instituto de Nanociencia y Materiales de Aragón (CSIC-Universidad de Zaragoza)
Citation: For key contributions to the understanding of the magnetic and transport properties of ferromagnetic oxides, and of nanomaterials grown by focused electron/ion beam deposition.

Alexander Golubov
University of Twente, The Netherlands
Citation: For fundamental contributions to the theory of multi-band superconductivity, and the theory of superconducting hybrid and topological systems.

Adrian M. Gozar
Yale University
Citation: For seminal contributions to spectroscopic and transport studies of complex oxides.

Maria Iavarone
Temple University
Citation: For outstanding and pioneering studies of spatially resolved electronic structure in broken symmetry states.

Peter Kuchment
Texas A&M University
Citation: For fundamental contributions to mathematical physics and inverse problems of medical imaging and homeland security.

Srinivas Raghu
Stanford University
Citation: For fundamental theoretical studies of the emergent properties of quantum materials, particularly for developing controlled field theoretic approaches to such problems.

Hong Yao
Tsinghua University
Citation: For fundamental contributions to the theory of quantum phases of matter, novel quantum critical phenomena, and their realization in quantum materials.

Fernando Sols
Universidad Complutense de Madrid
Citation: For fundamental contributions to a broad range of condensed matter physics problems, including quantum transport, superconductivity, quantum gases, and graphene plasmonics.

Jeff Sonier
Simon Fraser University
Citation: For pioneering work in precise measurements of fundamental length scales in type-II superconductors and contributions to investigations of magnetism in unconventional superconductors using muon spin rotation techniques.

Bernhard Urbaszek
LPCNO INSA-CNRS-UPS Toulouse, France
Citation: For sustained and significant contributions to the physics of light-charge-spin interactions in low-dimensional materials, particularly epitaxial quantum dot structures, and also novel monolayer semiconductors.

Jigang Wang
Iowa State University
Citation: For discoveries of coherent excitations and out-of-equilibrium topological and magnetic phenomena, and especially of light-induced Weyl and Dirac semimetals and Higgs modes in iron-based superconductors.

Yu Dapeng
Southern University of Science and Technology
Citation: For contributions to understanding the physics in low-dimensional quantum materials, such as 1D semiconductor quantum wires, 2D Dirac atomic single crystals (graphene-boron nitride), and discoveries of novel effects by tuning properties of quantum materials via opto/electrical, magnetic, and mechanical fields.

Huiqiu Yuan
Zhejiang University
Citation: For outstanding contributions to the research areas of unconventional superconductivity, quantum criticality, topological materials with strong electronic correlations, and superconductors with broken inversion/time-reversal symmetry.
Join DCMP

Please encourage others to join APS and DCMP. Also, make sure that your own membership is current. The more members we have, the more invited symposia that we can sponsor at the March Meeting, and the more nominations to be a Fellow of the Society that we can sponsor. Thus, an increase in our membership benefits our community.

To join APS, go to: http://www.aps.org/membership/join.cfm.
For students: https://www.aps.org/membership/student.cfm
For APS members to join DCMP, go to: http://www.aps.org/membership/units/join-unit.cfm

Nomination and Election of DCMP Executive Committee Members

Please participate in the nomination and election of DCMP officers and members-at-large of the Executive Committee. The upcoming positions are Vice Chair (who will become, in successive years, Chair Elect, Chair and Past Chair), Secretary/Treasurer, (3 year term) and three Members-at-Large (3-year terms).

The nomination period will be in the window of September 1 to October 15, 2022. The election will be in the window of November 29 to December 12, 2022. Candidate biographies and statements will be available on both the APS and DCMP web sites before and during the election. Forthcoming DCMP email correspondences will have more information.

The DCMP Executive Committee performs several functions. One of its most important responsibilities is to lead the organization of the APS March Meeting. It is the body that selects the division’s Invited Symposia from those nominated by the community. Thus a proper balance of expertise and diversity of the Committee are essential for a successful meeting. The Executive Committee helps to lobby Congress on science policy issues. Finally, the DCMP Members-at-Large choose potential new Fellows, from those nominated, to be considered by the APS Fellowship Committee and Council.

APS and DCMP response to invasion of Ukraine

From APS: “Many of our APS members have reached out to us regarding the Russian invasion of Ukraine. The situation for the population of Ukraine continues to worsen as the bombings of major cities are continuing to intensify. The Kharkiv Institute of Physics and Technology and the Department of Physics and Technology of Karazin University in Kharkiv have both been attacked. Consequently, we want to share with all APS members some of the things that APS has done—and is doing—in response, as well as providing links for actions that members can choose to take. For more information please visit: https://aps.org/programs/international/ukraine.cfm”

DCMP has engaged with its members and has also pledged $25K, matched by APS, towards financial assistance in support of scientists, students, and research institutions impacted by the invasion of Ukraine.

The 2022 Annual Leadership Meeting

The APS Annual Leadership Meeting is a forum for discussing the ways that the physics community can advance and diffuse the knowledge of and excitement in physics and ensure that all who want to practice physics find a welcoming and supportive environment. For more information, please visit: https://leadership.aps.org/

APS Government Affairs

Connected with DCMP and other units through congressional visits and advocacy opportunities on several issues, including federal research funding, support for international students, enhancing STEM education, missile defense, monitoring of methane emission, and helium supply shortages. For more information on Govt Affairs, please visit: https://www.aps.org/policy/

March Meeting Brings a Physics Fiesta to a school in Chicago

The annual APS March Meeting brings thousands of physicists together in one city—this year, a group of physicists brought their enthusiasm for physics into the community. They gathered with hundreds of students and their families at Physics Fiesta, hosted at Chicago’s Eric Solorio Academy High School, and supported by DCMP and the Forum for Outreach and Engaging the Public.

To read about Physics Fiesta: https://www.aps.org/publications/apsnews/202206/fiesta.cfm

The DCMP Graduate Student Travel Awards

Graduate Student Travel Awards have been established to assist the professional development and careers of graduate student researchers. We anticipate awarding twenty $600 DCMP Travel Awards to assist graduate student members of DCMP in participating in the APS March Meeting. The selection will be based on merit and the committee will consist of members of the DCMP Executive Committee. The nomination window will be October 7–November 7, 2022. Forthcoming DCMP email correspondences will have more information.
Note from the Chair (continued from page 1)

Our community continues to be actively engaged at the broader APS level. Through the annual APS leadership meeting in January that some of us attended (alas, virtually) we learned of multiple APS priorities related to research practices, broadening our community, and global issues. We were delighted with the condensed matter ties of awardees honored at the meeting for foundational work involving exact solutions and for pioneering developments in hydrodynamics. In congressional visits organized by APS Government Affairs, physicists brought perspectives to issues concerning federal research funding, support for international students, enhancing STEM education, and more. Our DCMP unit has also been engaged in responding to the devastation being caused by the invasion of Ukraine, including support of the Scholars-at-Risk program. Our humanitarian work can never be enough for fellow physicists facing challenges and we are thankful for all your efforts.

Turning to communicating science, condensed matter physics unveils the richness and beauty that emerge when individuals come together, interact, and form communities in diverse ways. From exotic ultracold quantum phases to sand piles to strongly correlated matter in stellar objects, the physics offers tantalizing stories behind the vast realms that it spans and the explorers behind the discoveries. Many of us hope that more voices will join in sharing these stories with broader audiences. Take the instance of the magnetic disc hovering over a superconductor. There is such orchestration behind the cooled high-Tc material dynamically achieving superconducting order and hosting currents that form a cradle of field lines to suspend the magnet. And when one demonstrates this magic through the spooky fog of evaporating liquid nitrogen, we behold the wonder in a youngster’s eyes and their questions give fresh perspective. The one that tells the story learns as much as the avid listener.

In this Newsletter, we have put together some of what I describe here and more. In closing, I share my gratitude. Gratitude for the explorations we get to embark on as physicists through both dark and celebratory moments. And gratitude for the opportunity to work with our incredible DCMP Executive Committee and APS to serve our community.

With kind regards,
Smitha Vishveshwara,
DCMP Chair

DCMP Executive Committee List

Chair: Smitha Vishveshwara (03/22–03/23)
University of Illinois at Urbana-Champaign

Chair-Elect: Paul M Chaikin (03/22–03/23)
New York University (NYU)

Vice Chair: Shirley Chiang (03/22–03/23)
University of California, Davis

Past Chair: David K Campbell (03/22–03/23)
Boston University

Secretary/Treasurer: James A Sauls (03/19–03/23)
Northwestern University

Counselor: William Paul Halperin (01/20–12/23)
Northwestern University

Member-at-Large: Natalia Perkins (03/20–03/23)
University of Minnesota

Member-at-Large: Vidya Madhavan (03/20–03/23)
University of Illinois at Urbana-Champaign

Member-at-Large: Eun-Ah Kim (03/20–03/23)
Cornell University

Member-at-Large: Peter N Armitage (03/21–03/24)
Johns Hopkins University

Member-at-Large: Dragana Popovic (03/21–03/24)
Florida State University

Member-at-Large: Ian R Fisher (03/21–03/24)
Stanford University

Member-at-Large: Vesna F Mitrovic (03/22–03/25)
Brown University

Member-at-Large: Anushya Chandran (03/22–03/25)
Boston University

Member-at-Large: Kun Yang (03/22–03/25)
Florida State University Committee Members