

DCMP

Newsletter

Division of Condensed Matter Physics, American Physical Society
Summer 2007
Edited by Julia M. Phillips

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Important Deadlines and Dates

*DCMP Invited Symposium nominations.....	Friday, September 7, 2007
*Vote: DCMP Officers and Executive Committee.....	Friday, September 15, 2007
*New Orleans Contributed Abstracts.....	Tuesday, November 27, 2007
*APS Fellow Nominations.....	Friday, February 1, 2008
New Orleans APS Meeting.....	March 10-14, 2008

**See below for more details*

A Note from the DCMP Chair

The vitality of condensed-matter physics is demonstrated by strong research, diverse interests, and increasing entanglement with other branches of science. The March APS meeting, which continues to be dominated by condensed matter physics, has grown more than 25% since 2002.

The excitement and promise of condensed matter physics is captured in the most recent National Research Council decadal survey of condensed matter and materials physics (CMMP2010) <http://www7.nationalacademies.org/bpa/CMMP2010.html> released in mid-June and summarized in this newsletter. A somewhat different look at the exciting grand challenges in the field (as well as some other fields) is being taken by a subcommittee of the DOE Office of Basic Energy Sciences Advisory Committee (BESAC). The draft of this report was briefed to BESAC at its meeting in early August (<http://www.sc.doe.gov/bes/besac/meetings.html>); the final report will be issued in a few months. The picture that emerges from both studies is of a field that continues to address questions that drive to the heart of the deep human desire to understand the world around us and that simultaneously contributes the basis of technologies that improve our lives in profound ways we come to take for granted. It is indeed a privilege to be part of such an endeavor!

Last year's newsletter spoke optimistically about the prospect for significant increases for federal funding for physics (and particularly CMP) research. Unfortunately, political events intervened to make the end of the FY07 story considerably less rosy than we had hoped.

Nevertheless, there is cause for optimism about FY08 – provided that we, the community do our part to make the case. Support for fundamental research is a bipartisan issue, as indicated by the increases for NSF and the DOE Office of Science in the President's budget and in the budget legislation moving through Congress. A positive outcome is, however, far from certain. We, as a community, must continue to put forth the arguments about the value of federal investment in CMP research for the benefit of the Nation and the human race. A summary of recent activity on the FY08 budget, along with several statements by APS about research funding can be found at <http://www.aps.org/policy/issues/research-funding/index.cfm>. The APS webpages can help you contact your Legislators about the importance of FY08 support for science research funding (or any issue of your choosing. The url is <http://www.congressweb.com/cweb4/index.cfm?orgcode=APSPA>). The time to make your voice heard for FY08 funding is NOW!!

DCMP's principal focus each year is the March APS meeting. We organize a number of invited symposia, lead the sorting of contributed talks, and participate in the overall organization of the meeting. In addition, the Division has led the efforts at the meeting to influence Congress to act positively on research funding. Most of the "arm twisters" who asked you to write Congress during the meeting were recruited by the DCMP. (Be sure to write your Congressperson at the New Orleans meeting!)

Julia Phillips, August 2007

The 2008 March Meeting

The March meeting will be held in New Orleans, LA, March 10-14, 2008. This year, DCMP will organize 34 of the 94 total invited symposia. If last year is any guide, there will be roughly 40 parallel sessions and the Bulletin (which most participants will only have in electronic form) will run over 1000 pages.

Invited Symposium Nominations

The deadline for Invited Symposium nominations is Friday, September 7. In order to nominate an Invited Symposium for the March Meeting go to:

http://meetings.aps.org/aps_invited2/invited/LoginForm.cfm?MT=MAR08&UNIT=DCMP

The entire Executive Committee selects invited talks only from those proposals nominated by DCMP members. It cannot substitute speakers of its own choosing.

Suggestions for Creating a Successful Proposal

1. **Propose a Symposium on a timely idea with 5 strong talks.** In general, the DCMP favors symposia, and uses single speakers sparingly.
2. **Choose a good Symposium Title and provide a clear Symposium Justification.** This will give the selection committee an overview of the Symposium.
3. **Choose titles of individual talks carefully.**
4. **Provide an informative abstract for each talk.** This will underpin the idea of Symposium and give the selection committee a better idea of what the session will accomplish. The speaker can change them later.
5. **Provide recent references published in refereed journals.** These are helpful to the Committee to make sure work is current.
6. **Include an alternate speaker** in the abstract to provide an excellent substitute if the first choice is unavailable.
7. **Use the correct sorting category** (given below) to ensure that the correct subcommittee examines proposal. *Multiple submissions of a proposal are ineffective and counterproductive.*

List of Invited Symposia Categories

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| 1. Metals | 13. Artificially Structured Materials |
| 2. Semiconductors | 14. Surface, Interfaces & Thin Films |
| 3. Insulators and Dielectrics | 15. Instrumentation & Measurements |
| 4. Polymeric and Organic Materials | 16. Applications |
| 5. Superconductivity | 17. General Theory (Theoretical Methods) |
| 6. Magnetism | 18. General |
| 7. Complex Structured Materials | 19. High Pressure Physics |
| 8. Fluids & Soft Matter | 20. Quantum Fluids & Solids |
| 9. Phase Transitions & Strongly Correlated Systems | 21. Atomic, Molecular & Optical (AMO) |
| 10. Biological Physics | 22. Physics Education |
| 11. Chemical Physics | 23. Quantum Information, Concepts, & Computation |
| 12. Statistics & Nonlinear Physics | |

Contributed Abstract Submission

The deadline for receipt of abstracts is Tuesday, November 27, 2007 at 5:00 p.m. EST. Complete abstract submission instructions can be found at:

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

Note that the Sorting Categories for abstracts (which is much more detailed than the one for

invited symposia) can be found at:
<http://www.aps.org/meetings/march/categories.cfm>

Impact of Mile-High Letters to Capitol Hill: March Meeting “Contact Congress”

By Steve Pierson, Head of Government Relations, APS Washington Office

1200 Denver March Meeting attendees used the Contact Congress booth to sign letters to their Congressional delegation urging support for science research and education. DCMP led the effort by recruiting the “arm-twisters” (many from DCMP) to encourage participants to sign their name to the letters. The letters are essential to our work in the APS Washington Office on Capitol Hill. We are working with DCMP leadership to increase the numbers of March meeting attendees signing the letters. Here are some of the reasons the letters are so important.

Part of an APS strategy to influence Congress

The letters meeting attendees sign are part of a broad APS campaign to inform policy makers and the public about the importance of science research and education and actions needed to keep it healthy. The strategy includes Congressional visits by APS members and staff, coordinated activities with other organizations, including industry, letters to Congressional leadership and appropriators, and engagement with the news media.

The letters are one of a set of activities that the APS Washington Office coordinates around the time of the March meeting. First, we coordinate with Congressional staff to circulate a letter to appropriators on Capitol Hill during the March Meeting urging increased science research funding. The letters from APS members refer to the circulating letters and amplify the urgency of the message. After the March meeting, the Washington Office follows up with Congressional offices, making sure that the staff have seen the letters and encouraging action on their request.

The impact of the “Contact Congress” letters is further increased by incorporating the signature of each signer. At the end of the meeting, we print out the letter with the compiled signatures of all signing meeting participants from a Member’s District or state and fax it to the Congressional Office. The Congressional Office sees a hard copy of a single letter with say, 70 signatures, which has significantly more impact than 70 emails. The Washington Office can follow up by sending an email copy of the signed letter to the staffer who handles science research funding in the office.

For urgent issues that cannot wait for the March Meeting or that would benefit from broader APS participation, the Washington Office uses its email system for alerts to APS members. This system attaches a participant’s name and address to a template letter that the participant can edit before sending. The APS Washington Office tracks the number of emails to each office and follows up accordingly to increase their effectiveness.

ANY U.S. resident can sign

Any U.S. resident (i.e. an individual with a U.S. address) can sign onto the APS letters to Congress. Members of Congress represent the interests of all their constituents, whether or not they are allowed to vote. Federal employees can exercise their right as an individual to write to Congress if they use their home contact information.

Participation rates

1200 March meeting attendees (22% of the U.S. resident attendees) signed letters in Denver in 2007, more than at any March meeting except the 2005 meeting in Los Angeles when 1400 signed (27% of U.S. resident attendees). The DCMP leadership is working with the APS Washington Office to increase participation in order to amplify the impact of the APS message in Congress.

The central message

Given the myriad demands on the constrained federal budget, it is critical to make a compelling case for increasing science research funding *this* year. The most effective argument remains the competitiveness themes of the Gathering Storm report, "Rising above the Gathering Storm," and the Task Force on the Future of American Innovation report, "Benchmarks of our Innovation Future" (<http://futureofinnovation.org/2006report>). These reports document how countries like China, India, and Korea are copying the U.S. innovation economy and capturing more of the world's high-tech market, while the U.S. remains complacent. Since basic research in the physical sciences is the foundation of an innovation economy, it is vital that the U.S. increase its funding now to ensure U.S. economic vitality tomorrow.

The country's concern over fuel prices, climate change, and our dependence on foreign oil has made energy R&D a bipartisan priority in Congress. Only basic research can realize the transformational breakthroughs that will bring new technologies (e.g., fuel cells, biofuels, solar cells, electricity storage, fusion, hydrogen) to widespread commercialization and enable revolutionary technologies that we haven't even thought of yet.

See you in the Crescent City!

Thanks to DCMP for their steady support of the Washington Office activities. We also appreciate the "arm-twisters" who enthusiastically and tirelessly recruit meeting attendees to sign the letters and the participants who make Contact Congress part of their meeting itinerary.

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Decadal Survey of Condensed Matter and Materials Physics Released

By James Eisenstein, DCMP Member-at- Large

The decadal survey of condensed matter and materials physics (CMMP2010) was released in mid-June. The CMMP2010 committee was convened about a year prior by the National Research Council of the National Academies as part of the larger decadal survey of all of physics. The charge to the committee, developed by the Solid State Sciences Committee of the Board on Physics and Astronomy, was quite broad. The committee was instructed to identify the most compelling scientific questions facing the field, consider how they impact society at large, and to suggest ways to ensure that those questions are effectively attacked in the coming decade. The latter necessarily involved a close examination of the structure and level of funding for the field, the adequacy of the national scientific infrastructure, and the impact of the increasingly interdisciplinary nature of condensed matter science.

As the CMMP2010 report illustrates in detail, condensed matter and materials physics is incredibly vital and exciting. The breadth of the field is both exhilarating and a challenge to really encompass. Fundamental intellectual questions abound, many as deep as any in science. The societal impact of the field is so immense as to be difficult to catalog. The committee structured its report around a list of six overarching intellectual questions facing CMMP in the coming decade: 1) How do complex phenomena emerge from simple ingredients? 2) How will we meet the energy demands of future generations? 3) What is the physics of life? 4) What happens far from equilibrium and why? 5) What discoveries await us in the nanoworld? 6) How can the information revolution be extended?

In its assessment of the prospects for US condensed matter science to meet the challenges ahead, the committee identified various areas of concern. These include the precarious funding situation (e.g. nearly flat budgets in the face of steady scientific inflation; a discouraging decline in grant proposal success rates, especially for young investigators; etc.), the dramatic contraction of basic research at industrial labs (which is not being made up elsewhere), and the recognition that other nations are forging ahead in CMMP much more aggressively than we are in the US. The committee also focused significantly on broader societal issues (ranging from the dismal state of K-12 science education in America to the low diversity of the CMMP workforce) which affect CMMP in a direct way.

Among its several recommendations, the CMMP2010 report calls for a modest, but consistent increase in overall funding levels (~7% per year) and in the grant proposal success rates (to ~30%). The committee also noted that education and outreach activities are extremely important and ought to be strengthened, but at the same time that such programs should be funded independently from research itself. This decoupling was especially urged for young investigators in the formative stages of their careers. The report also includes several specific recommendations regarding construction and upgrade of national facilities for CMMP research, including one urging the DOE and NSF establish a distributed national facility for the growth of new materials for both fundamental and applied CMMP research. The report can be accessed at <http://www7.nationalacademies.org/bpa/CMMP2010.html> .

Vote for DCMP Officers and Executive Committee Members

Please participate in the election of DCMP officers and members of the executive committee. You will be asked to elect a new Vice Chair (who will become, in successive years, Chair Elect, Chair, and Past Chair), 3 members-at-large, and a Division Councilor. The election will occur during August and early September. Members will receive detailed instructions about voting from the APS. Candidate bios and statements will be available on both the APS and DCMP web sites before and during the election. (Go to the DCMP website: <http://dcmp.bc.edu/> and click the link which will appear there shortly, or go to the link in an email you'll get from APS once the elections site opens. Paper ballots will be mailed to those who cannot be reached by email.)

The DCMP Executive Committee performs several functions. Among its most important responsibilities is to be in charge of organizing the APS March Meeting. It is the body that chooses the division's Invited Symposia from those nominated by the DCMP membership and thus a proper balance on the Committee is essential for producing a well-run meeting. It helps to lobby Congress on science policy issues. Finally, the DCMP Members-at- Large select those names to be forwarded for consideration by the APS Fellowship Committee and Council.

The current membership of the DCMP Executive Committee can be found at <http://dcmp.bc.edu/page.php?name=exec> . Outgoing members-at-large are Mark Stiles (NIST), James Eisenstein (Caltech), Lia Krusin-Elbaum (IBM), David Tanner (U Florida, Past Chair), and Moses Chan (Penn State, Division Councilor).

DCMP Bylaw and Operating Procedure Changes

By David Tanner, Past Chair, DCMP

The DCMP executive committee reviewed the Division bylaws and operating procedures during its most recent fall and spring meetings. Changes within the APS Council, election mechanics, and March meeting operations dictated the bylaw and operating procedure modifications. The committee recommended 8 modifications to the bylaws. These changes have been reviewed by the APS Council (as required) and will be on the August ballot for membership vote.

The substantive items are:

- **Change of language to be consistent with the society's return from representative to senatorial membership on the APS Council.** This change occurred in 1999 and had the effect of reducing (by 2003) the number of DCMP councilors from four to one. The language of the bylaws was made singular and a paragraph discussing how a vacancy is determined was removed. (Nowadays, a vacancy occurs when the term expires.)
- **Change in the number of Members-at-Large from six to nine.** The Division met the reduction in the number of councilors by increasing the number of members at large on the executive committee from 6 to 9. Nine has been the number in effect for a number of

years, with the Division members electing three persons for three-year terms each year. However, there is no record of this change having been approved by the membership.

- **Changes in the voting procedures.** The Division has been using electronic voting for a number of years, though the bylaws specify a "mail ballot." The wording has been modified in several places to take this into account. Mail ballots will continue to be provided to those without email addresses and to those who request them.
- **Removal of requirements that certain business items be printed in the Bulletin.** The bulletin is no longer distributed in paper form.
- **Changes in the number or method of Executive Committee meetings.** The bylaws call for two meetings per year. Wording was added to specify that only one of these (which in practice will be the one held in March) need be face-to-face; the other may be by teleconference. This will save the Division some money and the Executive Committee members some time.
- **Changes in the interface to the Society.** Division meetings (i.e., the March Meeting and any others the Division wishes to organize) are to be coordinated with the Executive Officer of the APS and no longer need be approved by the Council.
- **Elimination of the possibility of amending the bylaws at the March Meeting.** The Division's business meeting is short and lightly attended, so the amendments will in the future need to be approved in a Division-wide vote. (This change was required by Council.)
- **Addition of generalized duty for the Chair Elect.** A sentence was added to parallelize the Chair-elect's duties with those of the other officers.

The language was modified here and there to reflect the above changes.

The Division website, <http://dcmp.bc.edu/>, has a pdf of the bylaws, with deletions and additions marked. The deletions are red with strikethrough; the additions are blue. This file is available at: http://dcmp.bc.edu/page.php?name=bylaws_note

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APS Fellow Nominations

DCMP members are encouraged to make nominations for Fellowship in the APS. The Division is able to elect each year one-half of one percent of the current membership. Nominations may be made at any time, but only those received by the deadline, February 1, will be considered for action in that year. Nomination instructions and advice for preparing a strong nomination are available at: <http://www.aps.org/programs/honors/fellowships/nominations.cfm>

Unsuccessful nominees are automatically reconsidered in the second year after nomination. Updated information from sponsors is recommended.

In March, the DCMP Fellowship Committee, made up of the Members-at-Large of the DCMP Executive Committee, reviews the nominations referred to the DCMP by the APS and makes recommendations to the APS Fellowship Committee.

Tips for Successful Nominations

The selection process is very competitive; when preparing nominations, sponsors should ensure that the achievements of their candidate are genuinely reflected by the material submitted. In general, the Fellowship Committee looks for sustained contributions to the field and successful nominees generally have over 10 years of professional experience beyond the Ph.D. Choose the (8) representative publications and the (10) other contributions with care. The supporting letters, which evaluate the candidate's work and discuss which of the candidate's achievements are "exceptional," aid the committee considerably.

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DCMP Web Site

The DCMP web site at <http://dcmp.bc.edu/> provides members general information and announcements of potential interest. This site also informs the general public of the role and value of condensed matter physics in our lives. You can see an impressive collection of images in the image gallery (<http://dcmp.bc.edu/page.php?name=gallery>).

We solicit contributions to the site from the DCMP membership for any subject matter that may help to achieve these goals. Please send your comments and suggestions to Ms. Irina Bariakhtar, who maintains the site, at dcmp@bc.edu.



Join DCMP!

Most, if not all, persons reading this are already DCMP members. So why put a call to join the division in the newsletter? Well, we hope that all current members continue as members in the upcoming year. We would like every member to recruit at least one new member. Ask your condensed matter colleagues if they are members of the DCMP. You'll be surprised by how many are not. It's only 7 bucks to join, and a person can join at any time. Finally, suggest that your students join. Student membership in DCMP is free. (See <http://dcmp.bc.edu/page.php?name=unitappl> for details.)

What do you get for membership? Well, each year you get a fine newsletter.... More important, both the number of invited symposia that we can organize and the number of Fellows that we can recommend are tied directly to the division membership. Any increase in these numbers benefits the entire community.