

DIVISION OF ATOMIC, MOLECULAR AND OPTICAL PHYSICS NEWSLETTER

A Division of The American Physical Society

November 2002

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FROM THE CHAIR: Chris Greene

DAMOP continues to thrive as one of the primetime divisions of the American Physical Society. One of the larger issues confronting DAMOP this past year was whether to meet jointly with the APS March Meeting, at least occasionally. As a first exploration of its desirability, Charles Clark proposed in Williamsburg that DAMOP should try this initially at our annual meeting in 2006. The entire country erupted in animated discussions of the pros and cons of this novel possibility, and a poll of the DAMOP membership was conducted. The vote was close, but in the end the voting membership preferred, by a 52%-48% margin (144 to 132), not to meet with the March Meeting in 2006. The Executive Committee felt this was not sufficiently convincing to accept as firm marching orders, so we ended up making the final decision by a separate vote. By a narrow 7-5 margin the Executive Committee decided to accept the membership's vote, and not to meet with the March Meeting in 2006. The site for that meeting has not yet been finalized, but more than one institution in the eastern United States has expressed an interest in hosting it, presumably in May or early June of 2006.

I encourage you all to come to Boulder in May, to help ensure that the 2003 DAMOP meeting will be as lively and successful as our other recent annual meetings have been.

PRIZES

Broida Prize

George W. Flynn, Eugene Higgins Professor of Chemistry at Columbia University, has been awarded the 2003 Herbert P. Broida Prize in Atomic and Molecular Spectroscopy and Chemical Physics. The Broida Prize Committee cited Flynn's "pioneering, insightful and sustained studies of vibrational energy transfer in polyatomic molecules using a number of innovative experimental techniques, and recent contributions to understanding of liquid-solid interfaces using scanning probe techniques." Flynn received his B.S. (1960) from Yale and his M.A. (1962) and Ph.D. (1965) from Harvard (Advisors John Baldeschwieler and E. Bright Wilson, Jr.). After a postdoctoral fellowship with Ali Javan at MIT, he joined Columbia University in 1967 where he has had a very distinguished career. In particular, he has served as Director of the Columbia Radiation Laboratories (1979-84, 1990-2000), Edison Professor (1986-92), Chairman of the Department of Chemistry (1994-96), Co-Chairman of the Department of Chemical Engineering and Applied Chemistry (1997-2000) and Director of the Environmental Molecular Sciences Institute (1998-present) as well as Higgins Professor. He has participated actively in the American Chemical Society (e.g. Chair of the ACS Division of Physical Chemistry (1997)), the American Physical Society (Fellow), and many other professional organizations and activities. A great many of his students have gone on to considerable fame of their own.

Rabi Prize

Mark Kasevich of Stanford University has been chosen from a group of outstanding nominees as the 2003 recipient of the I.I. Rabi Prize in Atomic,

Molecular, and Optical Physics. The Rabi Prize is awarded every other year to a person who has held a Ph.D. for ten years or less. Kasevich was cited for his outstanding work in the areas of Bose-Einstein condensation and atom interferometry. The citation reads:

"For developing atom interferometer inertial sensors with unprecedented precision, and for pioneering studies of Bose-Einstein condensates, especially the achievement of non-classical spin states and the demonstration of a mode-locked atom laser."

Kasevich will receive a certificate and a check for \$7,500 at the 2003 DAMOP meeting in Boulder, Colorado. We extend our congratulations to Mark Kasevich!

DAMOP 2002

Letter from the outgoing chair:

The 2002 DAMOP was held in Williamsburg, Virginia, and, at least according to the organizers, it was a great success. Our most important innovation this year was a pre-conference tutorial for graduate students and postdocs. (See below). Also, because the Division of Particles and Fields was holding their annual meeting just prior to ours, we held a joint symposium with them on the afternoon preceding the conference.

Another topic discussed warmly at the business meeting was the future format of DAMOP conferences. Some advocated joining in 2006 with the general APS March meeting, while others did not like that idea. Eventually the issue was decided without a single fistfight - - the Executive Committee surveyed the membership, and decided that we will NOT join in 2006 with the March meeting. The question will come up again for future years. In any case many members want us to increase our participation and visibility at the March meeting.

The total number of people attending this year was about 800, DAMOP ended up with a "profit" of about \$20,000, and there were many exciting presentations in all areas of AMO physics. Thanks go to Roy Champion for handling all the local arrangements. I want to thank all the members of all the committees for all the work they have done, and for making my work as chair easy and fun. John Delos, Past Chair

Graduate Symposium

In association with the DAMOP 2002 Meeting in Williamsburg, VA, a special one-day graduate symposium was held on May 28, 2002, the day before the start of the regular meeting. The event was organized by Mark Havey (with much help from Andy Sieradzan (CMU), Charles Sukenik (ODU) and others) and was hosted by the Department of Physics at Old Dominion University, Norfolk, VA. The main purpose of the Symposium was to provide an introduction to several scientific areas of significant interest to many DAMOP student participants. Tutorial lectures on Ultrafast Phenomena (Margaret Murnane), on Quantum Information (Christopher Monroe), and on Bose-Einstein Condensation (William Phillips) gave an introduction of these subjects directed towards graduate students and postdoctoral researchers in Atomic, Molecular and Optical Physics. The outstanding lectures, and the enthusiastic participation of nearly 75 participants was an exciting and educational prelude to DAMOP 2002. The

symposium was made possible by the generous support of NSF, NIST, DAMOP, and Old Dominion University. DAMOP expects to continue this tradition in 2003: watch the DAMOP 2003 meeting web page for further information.

DAMOP 2003

Special Session on Undergraduate Research at DAMOP 2003 : Call for Papers

There will be a special session featuring research performed by undergraduate students at the 2003 DAMOP meeting. The papers will be 20 minutes long including discussion. Interested students should submit in the BODY of an e-mail message: 1) Title, 2) Authors and Affiliations, 3) text of the Abstract and 4) a one page summary of their contribution to the project by January 24, 2003. Since for those selected to participate in the Session the Committee will directly submit their Abstracts to the APS/DAMOP, the Abstracts should conform to APS style and length formats for a Contributed Paper. Compliance can be checked by going to <http://abstracts.aps.org>, selecting "Prepare an Abstract," designating "Test Web Abstract," and then choosing "Create an abstract for me." Fill out the indicated information and cut-and-paste the text of the Abstract into the indicated box. This will display the Abstract as it will appear in the Program and will also show any formatting problems. Please DO NOT submit the Abstract to DAMOP until notification by the Committee of the results of the selection process. From the submitted materials, a committee will select four students to be invited to give talks in the special session. Participation is limited to currently enrolled undergraduate students. The participation of women and minority undergraduate students is especially encouraged. PLEASE NOTE EARLY ABSTRACT DEADLINE. The deadline for regular abstracts for the DAMOP meeting is February 7, 2003. The deadline for abstracts for the undergraduate session is January 24. Abstracts should be sent to Lee Collins at lac@lanl.gov.

Student Travel Support for DAMOP 2003

Limited travel support is available to assist graduate students in traveling to Boulder, Colorado, for the DAMOP meeting in May 2003. Students should complete the appropriate travel form and return it to Lew Cocke (preferably by email to damop@phys.ksu.edu, but also by normal mail to C.L.Cocke, Physics Dept., Kansas State University, Manhattan, KS, 66506) before 28 March 2003. The form may be found at <http://damop.org/TravelForm.html>.

DAMOP PARTICIPATION IN THE 2003 APS MARCH MEETING

The 2003 March Meeting of the American Physical Society takes place in Austin, TX, March 3-7, 2003. For the second year running, DAMOP will be a participating unit in this meeting ([/meet/MAR03/](#)). We have three invited symposia: "Rapidly rotating Bose-Einstein condensates," organized by Allan Griffin (joint with the Division of Condensed Matter Physics, DCMP); "Computational Approaches to Time-Dependent Dynamical Problems," organized by Barry Schneider (joint with the Division of Computational Physics, DCOMP); "Scalable AMO Approaches to Quantum Computing," organized by Carl Williams. The last is one of three quantum information symposia that run back to back on Thursday, March 6, the others being organized by the Division of

Material Physics and DCOMP. A half-day tutorial session on quantum gases, to be held on the morning of Sunday, March 2, is being organized by Dan Heinzen ([/meet/MAR03/special.cfm#2](#)). There are numerous other invited symposia sponsored by other units that highlight AMO topics, such as atoms in optical lattices, laser-based ultrafast sources and applications, single-molecule biophysics, optical control of complex systems, synchrotron research, ultrafast dynamics, and optical tweezers. The March Meeting is the main APS meeting in the areas of nanotechnology and biological physics, growing fields with much overlap with DAMOP interests. The sorting categories for March Meeting contributed papers have been substantially revised this year to include virtually all topics in AMO physics: see [/meet/MAR03/abs.cfm](#). The deadline for submission of contributed abstracts is December 6, 2002 at 5:00 p.m. EST. The APS March Meeting is the world's largest physics meeting, and provides unique opportunities for networking and discovering opportunities in areas adjoining AMO science. We hope to see many DAMOPers in Austin next year!

Some other meetings:

'Energierreiche Atomare Stoesse',
to be held from February 16 - 21, 2003 in Riezlern, a beautiful ski resort in Kleinwalsertal.

<http://www.mpiyks-dresden.mpg.de/?eas>

Conference on Lasers and Electro-Optics (CLEO) Quantum Electronics and Laser Science (QELS)

June 1-6, 2003,

Baltimore, Maryland,

<http://www.osa.org/meetings/cleo/>

The 16th International Conference on Ion Beam Analysis

June 29- July 4, 2003,

Albuquerque, NM

<http://www.sandia.gov/1100/X1111.html>

ICPEAC XXIII,

July 23-29, 2003,

Stockholm, Sweden

<http://www.physto.se/icpeac>

ANNOUNCEMENTS FROM COMMITTEE CHAIRS

Fellowship in APS

Each year up to one half of one percent of the total membership of APS is selected for Fellowship in the American Physical Society. New Fellows, who are to be nominated by two existing fellows, are selected by fellowship committees of the various APS units, and approved by APS itself. The DAMOP Fellowship Committee consists of Jim McGuire (chair), Dan Heinzen, Jim Cohen, Pierre Meystre and Lou DiMauro. The deadline for the DAMOP Committee is April 1, 2003. DAMOP is usually able to support 10 - 12 new fellows each year. About twice that number are nominated by their colleagues. The nomination is good for two consecutive years: those who are not selected on the first try are automatically considered the following year. I encourage you to organize nominations. There are many deserving people who are not fellows only because no one took a few minutes to fill out a nomination form and write a letter. The

process is relatively simple. Forms and detailed procedures are available under "Fellowship" on the APS website ([/](#)). Jim McGuire, DAMOP Vice Chair, mcquire@tulane.edu

Nominating Committee

The DAMOP Nominating Committee welcomes suggestions of candidates for Vice-Chair and two members of the executive committee. Please contact the Chair (Jim Cohen) or other members of the committee (Carmen Cisneros, Phil Gould, Wendell Hill, and Francis Robicheaux) with your suggestions of candidates who are willing to serve, along with a brief supporting statement. The suggestions should be made by Dec. 1. Jim Cohen, jsc@t4.lanl.gov.

Publicity Committee

As a former member of several DAMOP Publicity Committees, my main qualification to be Chair of the committee this year is a lot of experience with what has not worked as well as we would have liked in the past. So I would like you to send me some fresh good ideas on how to do my job. In case you have the partially misguided impression, past failure is not always a sign of a lack of enthusiasm. In any case I am quite eager to publicize good work in AMO physics. Our colleague, David Harris at APS, can be a big help in getting through to newspapers and other news organizations. APS also has its own website. So if you know of some good work, including your own work, please contact me by mail (Physics, Tulane University, New Orleans, LA 70118-5698), by e-mail (mcquire@tulane.edu), by phone (504 866 3296) by FAX (504 862 8702) or by coming to New Orleans in person. Jim McGuire, Chair, DAMOP Publicity Committee

PUBLICATION NEWS

The News from Physical Review Letters

Gene Wells retired in November 2001. The new managing editor is Reinhardt Schuhmann. Two new editors have been hired, one to replace Wells and one to increase the number of editors available to handle the growth in submissions. The journal areas directly affected are mostly condensed matter physics but one of the new editors, Orla Feeney, will be handling some optics papers. Although the main editor for AMO is George Basbas, he receives crucial assistance from Frank Narducci and Brant Johnson who are working physicists acting remotely as editors on a part-time basis.

Robert Garisto handles papers on the foundations of quantum mechanics and on quantum information. The journal is currently under review by an outside committee, whose membership includes Eric Cornell. The Divisional Associate Editors (PRL editorial board members) continue to be Phil Burke, Keith Burnett, Eric Cornell, Maciek Lewenstein, Mark Raizen, and Wolfgang Schleich. They are very generous with their time and work hard to advise on difficult editorial cases. They do a superb and essential job for which the community should be grateful.

Although their appointments are not explicitly connected to any Division, it will be of interest to the AMO Division to note that Charles H. Bennett is the Divisional Associate Editor for Quantum Information and Philippe Eberhard has

that appointment for Foundations of Quantum Mechanics. We are pleased to announce that Eugen Merzbacher will replace Philippe Eberhard when his term ends at the end of this year. George Basbas

The news from Physical Review A

The growth of PRA continues unabated: In 2001 we had 2160 submissions (up 8.9% over '00), 77% from abroad (up from 75%), 36.2% rejection rate (49% so far in 2002), 11826 pages published (up 10.5% over '00, expected further increase of 22.6% in 2002). Largest growth is in Secs. A-2 (Quantum information) and 8 (Matter waves). Fundamental concepts (A-1) submittals had been rising steeply and include an exceptionally large proportion of unacceptable papers; a rise in rejection rate for this Section to 61% appears to have stemmed this growth. A-3, Atomic and molecular structure and dynamics, has been declining.

The Editorial Office is heavily overburdened during our move into the electronic world, but already in the first nine months of this year, 60% of manuscripts were sent electronically to referees. Communication with "remote" editors, of which PRA and E have the most, is likely to become more efficient when a system dubbed "Webpro" is initiated, probably in 2003. The first phase of Webpro was started this year with the implementation of a web-based referee server. This allows referees to access papers and update their current information via a URL. This web-based approach is expected to speed up the editorial process and greatly reduce mailing charges.

Physical Review A and E welcome new Assistant Editor Dirk Jan Bukman, joining us in November from Cornell University. Bernd Crasemann.

ATOMS, MOLECULES AND LIGHT: NRC/NAS REPORT

The report entitled Atoms, Molecules and Light: AMO Science Enabling the Future, published by the National Academies Press, is now available. This report is a sequel to the FAMOS report, but in a very different format: it is a "slick cover" document which targets a general audience. It extols the virtues and victories of our community in a very engaging and colorful manner, and is an excellent document to take with you when you visit a congressperson or university administrator or go on a recruitment trip. The systematic distribution of the report is still under discussion by the DAMOP executive committee (send suggestions to Chris Greene), but for now it is available two ways: If you are going on a visit to your congressman or university president or have a similar use for the document, you may request a small number of copies (10 or less) by sending an email request to damop@phys.ksu.edu. The copies will be sent to DAMOP members free of charge. Plan ahead: do not expect overnight mailing. The report is also available on the web at <http://www.nap.edu/catalog/10516.html>.

FUNDING AGENCY NEWS

DOE

The DOE/BES Atomic, Molecular and Optical Sciences Program accepts unsolicited research proposals from university applicants at any time during the year. Program relevance is an important criterion for applications sent to DOE/BES. Thus, a potential applicant is very strongly advised to send a brief

preproposal describing the proposed research to the Program Manager prior to submitting a full proposal. The Program Manager uses the preproposal to assess the fit between the proposed research and the AMOS (or other) Program. Following an encouragement of a full application, the applicant should submit a proposal following the grant application guidelines at: <http://www.sc.doe.gov/production/grants/grants.html>. This website also lists all proposal solicitations in the DOE Office of Science.

While there are no application deadlines for the AMOS Program, decisions on new projects are usually made in April-June of each year. In order to be ready for a funding decision, an application must have completed peer review, a process that can take 4-6 months. To learn more about the BES AMOS Program or to discuss a potential application, contact Eric Rohlfing, Program Manager for the BES AMOS Program at 301-903-8165 or eric.rohlfing@science.doe.gov.

NSF

The NSF again is calling for proposals under the Major Research Instrumentation program . The deadline is January 23, 2003. Details of the program can be found on the NSF website: <http://www.nsf.gov/pubs/2002/nsf01171/nsf01171.html>. Investigators at primarily undergraduate institutions are strongly encouraged to apply.

SPECIAL ITEMS AND ANNOUNCEMENTS

Few Body Topical Group

The Few Body Topical Group, an interdisciplinary organization of physicists and quantum chemists interested in the dynamics of 'simple' systems, has strong intellectual ties to DAMOP; indeed, DAMOP members account for the second largest fraction of the GFB membership. GFB has traditionally organized invited symposia for the APS April meeting, sometimes with DAMOP co-sponsorship. The decision by DAMOP to pull out of the April meeting , which is dominated by the nuclear, particle, plasma, and astrophysics communities, was based on the attendance at the April DAMOP sessions, which has been poor and declining for a decade. Maintaining strong ties between GFB and DAMOP benefits both organizations and is vital for the future health of the topical group. With the departure of DAMOP from the April meeting, we will be looking for alternative ways to foster an exchange of ideas. One obvious way to stay in contact is to have a co-sponsored GFB session at future DAMOP divisional meetings and we hope that discussions along these lines will continue. Tom Rescigno, TNRescigno@lbl.gov

Los Alamos Summer School

We plan to run a ten-week session of the Los Alamos Summer School from June 9 to August 15,2003. The program consists of an intensive series of lectures, tutorials, and mentored research projects. Upper-division undergraduates remain the principal focus of the School. First-year graduate students and undergraduate sophomores with exceptional physics backgrounds will also be considered. The deadline for applications will be March 1,2003. The School functions as a joint collaboration between the Los Alamos National Laboratory and the University of New Mexico. Recruiting this year originates from UNM-Albuquerque(Prof. Sally Seidel), and the summer program resides in Los Alamos. Complete information

and application forms should be posted at our website no later than Dec. 15,2002:
<http://www.phys.unm.edu/LASS/> Alternative contact: Los Alamos Summer School,
Department of Physics and Astronomy ,University of New Mexico, 800 Yale
Blvd. N.E., Albuquerque, NM 87131-1156, seidel@dot.phys.unm.edu,
505-277-1520 (fax), 505-277-2616 (voice) Correspondent: Lee Collins
(lac@lanl.gov)

Turnover

Thanks and rest are due to a number of DAMOP members who are rotating off assignments this year. Tim Gay is ending his three year sentence as Secretary Treasurer after yeoman service. THANKS TIM. We thank the committee chairs who are finishing their work, including Phil Gould (Nominating) and Deborah Watson (Thesis Prize), Randy Hulet (Rabi Prize) and Bill Stwalley (Broida Prize). Jim McGuire was elected Vice Chair, to follow Barry Dunning in the chair line; Kate Kirby will be the new Divisional Councillor; Dave Schultz and Steve Rolston are new members of the Executive Committee. New committee chairs are: Thesis Prize- Reinhold Blumel; Nominating- Jim Cohen; Fellowship and Publicity- Jim McGuire; Program- Barry Dunning; Davisson-Germer Prize- Mara Prentiss; Allis Prize- Ann Orel. We owe a round of applause to those who give so much of their time and energy to the activities of DAMOP. Finally yours truly, Lew Cocke, is taking on the job of Secretary Treasurer. Um.

Summary of useful deadlines:

Thesis Prize: Dec. 1, 2002, Reinhold Blumel, blumel@wesleyan.edu

Fellowship: April 1, 2003, Jim McGuire, mcguire@tulane.edu

Nominations for DAMOP officers: Dec. 1, 2002, Jim Cohen, jsc@t4.lanl.gov

Davisson-Germer Prize: July 1, 2003, Mara Prentiss, prentiss@physics.harvard.edu

Will Allis Prize: July 1, 2003, Ann Orel, woodin@llnl.gov

DAMOP 03: Abstracts: Feb. 7, 2003; Undergraduate research session, Jan.24,2003, Lee Collins, lac@lanl.gov; Student travel support, Mar. 28, 2003, Lew Cocke, damop@phys.ksu.edu

March 03 APS: Abstracts, Dec. 6, 2002

See [/DAMOP/](#) for further information

Newsletter News

By vote of the executive committee, this will be the last snail-mailed newsletter from DAMOP. Future newsletters will be distributed electronically. All newsletters back through 1997 are available from the DAMOP web site, [/DAMOP](#). If you have any information, ideas, meeting announcements, etc., which are of interest to DAMOP members, please send them to Lew Cocke , cocke@phys.ksu.edu at any time. They can either be included in the next newsletter, or distributed to the DAMOP email list within a week of receipt.
