

DIVISION OF ATOMIC, MOLECULAR AND OPTICAL PHYSICS NEWSLETTER

A Division of The American Physical Society

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INSIDE...

- [Calls for Nominations](#)
- [The 7 Per Cent Solution](#)
- [1998 DAMOP/DAMP Meeting](#)
- [News From TAMOC](#)
- [DAMOP Committees](#)

Message From the Chair

Kate Kirby

In assembling the list of invited symposia (see page 4 of this Newsletter) to be featured at DAMOP '98 in Santa Fe, I am struck by the great breadth of our discipline, encompassing work at the forefront of atomic, molecular and optical physics as well as applications of AMO physics in other areas of science and in industry. It is immensely gratifying that at a time when AMO physicists are creating and probing Bose Einstein condensates at the coldest temperatures ever achieved, performing measurements and calculations with unprecedented precision, and crafting laser pulses to deliver energy in just the right way to break a particular bond, we can also reach out and explore the vital connections of our discipline to other fields such as molecular biology, astrophysics, medicine and technology. A number of us have come to expect this diversity of topics at a DAMOP Annual Meeting. It says a lot about the inherent scientific curiosity of AMO Physicists, that

we are interested in devoting a significant part of our meeting to learning about other areas that draw upon fundamental AMO research.

We are entering an era in which "applied" is no longer a pejorative adjective. At the end of September, the "enabling" aspect of AMO science was highlighted by the first International Conference on Atomic and Molecular Data and Their Applications (ICAMDATA). This DAMOP-endorsed meeting was held at NIST in Gaithersburg September 29 - October 2, 1997. The purpose of the conference was to provide a forum for discussion of atomic and molecular data needs, data production, compilation and assessment, as well as database development. At a time when it is important to explain the relevance of science to advances in technology, health care, the economy and the quality of life, the diversity and the connections in AMO Physics are tremendous assets.

NOMINATIONS FOR APS FELLOWSHIP

The DAMOP Fellowship Committee relies on the AMO community to nominate outstanding individuals to receive this honor. Because fellowship selection within DAMOP is highly competitive, submission of additional supporting material such as the candidate's vita, bibliography and letters of support in addition to the nomination form is encouraged. The nomination form is available on the APS homepage at <http://www.aps.org>. Nomination packages should reach the APS (Ken Cole, cole@aps.org) by **15 March 1998**.

NOMINATIONS FOR DAMOP OFFICES

The DAMOP Nominating Committee welcomes suggestions of candidates for Vice Chair and for Executive Committee membership. Please contact the Chair (Keith MacAdam) or other members of the committee with your suggestions of candidates who are willing to serve, along with a brief supporting statement. The slate will be finalized in December. The list of committee members is included on page 5 of this Newsletter.

AWARD FOR OUTSTANDING DOCTORAL THESIS RESEARCH IN ATOMIC, MOLECULAR OR OPTICAL PHYSICS

Sponsored by members and friends of the APS Division of Atomic, Molecular and Optical Physics.

Purpose: To recognize doctoral thesis research of outstanding quality and achievement in atomic, molecular or optical physics, and to encourage effective written and oral presentation of research results.

Nature: The award, which is given annually, consists of \$1,000 and a certificate citing the contributions made by the recipient. The award will be presented at the DAMOP Meeting in Santa Fe, New Mexico in May of 1998. Nominees must submit an abstract for presentation at the meeting. The selection committee will choose finalists who will be required to present their work orally in a special invited paper session devoted solely to such presentations. The selection committee will choose the winner from among the finalists based on both oral presentation and the written material described below. All finalists will

receive a travel stipend of \$500.

Rules and Eligibility: Doctoral students at any university in the U.S. or abroad who passed their thesis defense for the Ph.D. in the disciplines of atomic, molecular or optical physics after 5 December 1995 and before the nomination deadline are eligible for the award, except for those whose thesis advisors serve on the current selection committee. Any APS member may submit a nomination for this award. For details contact the chair of the selection committee or the APS web site.

The complete nomination package must be submitted by 5 December 1997 to the chair of the selection committee: **Carol Tanner**, Department of Physics, University of Notre Dame, Notre Dame, IN 46556, Phone: (219) 631-8369, Fax: (219) 631-5952, email: carol.e.tanner.1@nd.edu.

CALL FOR PAPERS - SPECIAL SESSION ON UNDER-GRADUATE RESEARCH

There will be a special session featuring research performed by undergraduate students at the 1998 DAMOP meeting. The papers will be 20 minutes long including discussion. Interested students should submit an electronic abstract for their talk in standard APS format and a one page summary of principal findings by January 23, 1998. 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.

Abstracts should be sent by January 23, 1998 to Don Madison at madison@umr.edu.

THE 7 PERCENT SOLUTION TODAY AND TOMORROW

Michael S. Lubell

APS Director of Public Affairs

"At a time of scarce resources in Washington, it is tempting to see the scientific community as just one more hungry claimant. That's short sighted. Like public education, serious funding for science is a vital national investment. The men and women in our laboratories stand at the threshold of dazzling new breakthroughs, and the nation should be standing there with them, supporting their work and sharing their joy of discovery."

That's how David Gergen concluded his editorial in U.S. News and World Report last May 17, which he wrote in response to the call for a 7% increase in federal research budgets that the leaders of 48 professional societies had issued not long before.

But Gergen was not alone in expressing support for "The 7 Percent Solution." By the time the congressional curtain rang down on the Fiscal Year 1998 budget in October, the predicted hard freeze on scientific research the most optimistic of the earlier forecasts had all but vanished. True, some research activities were held to their Fiscal Year 1997 levels, but for the most part, science budgets increased by 3.5 to 7 percent.

A coincidence? I think not. The 48 societies represent more than 1.5

million scientists, engineers and mathematicians. Most of them have families and most of them go to the polls regularly. That means about 5 million votes hanging in the balance in the next election. Only the most foolhardy politician wouldn't pause and take notice.

Getting a senator or a representative's attention is one thing. Getting action is quite another. But "The 7 Percent Solution" carried a compelling message. Science is the underpinning of our economic growth, our quality of life, our health and our national security.

Gergen summarized the economic argument this way. "Stanford's Michael Boskin estimates that half of all long-term economic growth since World War II in industrialized nations is due to technological progress which, in turn, is rooted in basic research." Gergen also cited University of Pennsylvania Professor Edwin Mansfield's study, which concludes that "academic research in science has a 'social rate of return' in the form of lower prices, better products and higher productivity that exceeds 20 percent."

He could have gone further. Former Chairman of the President's Council of Economic Advisers Laura Tyson, for example, argues that the social rate of return could well exceed 50 percent. And CHI Research, an international consulting organization, reported last May that in recent years, almost 75 percent of the research papers cited in U.S. industrial patents have been based upon publicly supported science.

The conclusion is clear. As a nation, we should invest as much as we can afford in long-term research until all good ideas are exhausted. How much we can afford depends on how much we are willing to be taxed, what other demands we make on the federal budget and what rates of return other forms of investment, both public and private, are able to generate. "The 7 Percent Solution" established a target for Fiscal Year 1998 that attempted to balance the research investment with the political and budgetary realities of the 1990s. Congress seemed to take the proposition seriously.

Now the Fiscal Year 1998 is essentially settled, what's in store for the next few years? The balanced budget agreement establishes constraints on federal spending that would seem to leave research in a precarious position. Yet, if economic growth continues to exceed expectations, tax revenues will soon produce a budget surplus. With that in mind, Senators Phil Gramm (R-TX) and Joseph Lieberman (D-CT) co-sponsored a bi-partisan bill in October that urges a doubling of federal investments in long-term research over the next ten years at an annual rate of about 7 percent. And on the steps of the Capitol, the leaders of 100 professional societies joined together to make a similar call.

What the outcome will be is still uncertain. But 2.5 million scientists, engineers and mathematicians speaking in unison can pack a powerful wallop in Washington if their argument is sound.

1998 DAMOP/DAMP MEETING

James Cohen

General Information

The 1998 Annual Meeting of the Division of Atomic, Molecular and Optical Physics joint with the Division of Atomic and Molecular

Physics of the Canadian Association of Physicists will be held at the Sweeney Center in the historic downtown area of Santa Fe, New Mexico, on Wednesday through Saturday, 27-30 May 1998, continuing the four-day format started in 1996. A welcoming reception will be held on the evening of Tuesday, May 26 at the nearby Palace of the Governors on the Plaza. Lodging is available in nearby hotels at special rates. Overflows will be accommodated at other hotels that provide vans to the Sweeney Center. Reservations should be made directly with the hotels (list with telephone numbers will be provided in subsequent announcements), mentioning the DAMOP '98 meeting. To assure getting the special rates, reservations should be made by 4/24/98. Economical student housing is available at college dormitories with shuttle service provided.

The Local Organizing Committee includes members from Los Alamos National Laboratory, the University of New Mexico, Sandia Laboratory, and the Phillips Laboratory.

Travel to Santa Fe

Santa Fe has a small municipal airport with service to Denver. However, most participants will find it more economical and convenient to travel to the Albuquerque International Airport and make the transit (about one hour) to their Santa Fe hotel on the Shuttlejack (bus). Reservations for the Shuttlejack should be made 24 hours in advance at (505) 982-4311. Rental cars are also possible but not encouraged since parking is limited in the downtown area of Santa Fe.

Santa Fe

Santa Fe, "The City Different", is a very old and historic community, renowned for its culture, arts, places to stay and dine, as well as nearby Pueblos and outdoor attractions. Late May is normally dry with cool nights and early mornings (47 F low / 73 F high). For more information, visit the Web sites <http://www.nets.com/santafe> or <http://www.sfol.com/sfol/sfol.cfm>.

Laboratory visits to Los Alamos and Albuquerque will be arranged by members of the Local Committee for interested small groups.

Registration

Preregistration forms will be printed in the January issue of the APS Meeting News and DAMOP Newsletter. The early (before 4/13/98) registration fees (including banquet) are:

APS Member - \$220

APS nonmember - \$295

Student - \$110

Contributed Papers

The Meeting will provide a forum for presenting scientific work as either a contributed talk or a poster. We strongly encourage all authors to submit their abstracts electronically, and the APS offers the following general information regarding procedures for electronic submission.

Submitting electronically has several advantages over mailing a paper abstract:

You will receive a primary acknowledgment of receipt within 72 hours of sending your abstract; a secondary message will include a log number to help reference your abstract should you have questions or problems (withdrawals, changes, etc.); and a final message will include your session and paper number

assignment to help you make travel plans.

Additionally, your abstract will appear in its entirety in the on-line version of the BAPS, which typically is available to members several weeks prior to the printed version. In the case of paper submissions, both media will list only the title and authors.

Only APS members can submit abstracts. The submissions must meet the length requirements and arrive by the deadline. The deadline for receipt of abstracts is Friday, **February 6, 1998**, at 5:00 PM EST.

You can obtain the files for preparing and submitting your abstract by sending an e-mail to abs-request@aps.org and including the phrase "**request DAMOP98**" in the body of your e-mail message. For further information about the submission process, visit the APS meeting page at [/meet/instruct.cfm](#).

Special Undergraduate Activities

The local organizers are planning a "Conference Experience for Under- graduates," which will have activities during the meeting as well as a follow-up enrichment week; further information will be given in subsequent announcements. There will also be a special session at the DAMOP meeting with undergraduate students presenting their research; prospective contributors can contact Don Madison [madison@umr.edu].

Further Details

Further meeting program and abstract information, registration form, hotel list, etc., will be available in the January issue of the APS Meeting News, as well as in the DAMOP Newsletter. Information (including any last-minute announcements) will also be posted on the world wide web at

<http://t4.lanl.gov/DAMOP/DAMOP.html>. For other questions please contact James S. Cohen, Chair, DAMOP Local Organizing Committee, Group T-4, MS B212, Los Alamos National Laboratory, Los Alamos, NM 87545; phone (505) 667-5751; fax (505) 665-6229; email: damop@t4.lanl.gov.

INVITED SYMPOSIA

The invited symposia for the 1998 DAMOP meeting and their organizers are listed below:

- **Macroscopic Quantum States: BEC and Atom Lasers**
Randy Hulet
- **Quantum State Manipulation and Control** Pierre
Meystre
- **Electronic Spectroscopy of Real and Artificial Atoms
and Molecules** Robert Gordon
- **New Results in Electron and Positron Collision Physics**
Bill McConkey
- **"Hot" Research with Cold Atoms and Molecules** Bill
Phillips

- **Atomic Manipulation** Barry Dunning
- **Recent Advances in Atomic and Molecular Astrophysics** Kate Kirby
- **Industrial Applications of AMO Physics** Dave Cartwright
- **New Results in Ion-Atom Collisions** Fred Meyer
- **Optical Techniques in Molecular Biology** Steve Pratt/Randy Hulet
- **X-Ray AMO Physics** Dennis Lindle
- **Coherent Control of Atomic and Molecular Processes** Steve Pratt
- **Research Applications using Spin-polarized Noble Gases** Kate Kirby
- **Multiphoton Processes** Linn Van Woerkom
- **Molecular Dissociation** Winifred Huo

1999 APS CENTENNIAL MEETING

Carl Wieman

The 1999 DAMOP meeting in Atlanta will be part of the special centenary meeting of the APS. It promises to be a unique occasion, but will be different from our traditional meeting in a number of ways. It will be in March, and will be part of what is almost certainly going to be the largest APS meeting ever held. The annual meetings of several different divisions will be held jointly, and the full meeting will have many thousands of attendees. In addition to a vast number of sessions covering all areas of physics, there will be many special events organized by the APS. While there will be many good features of this meeting, you may want to plan ahead to reduce the disadvantages inherent in such a large meeting. Planning for technical sessions, and therefore suggestions for topics and speakers, and all arrangements for meeting rooms will have to be done significantly earlier than usual. It would also probably be a good idea to make your travel arrangements earlier than normal. When making your travel plans, you should keep in mind the numerous special events the APS will be arranging for physicists and the general public before the official beginning of the meeting.

NEWS FROM TAMOC

David Schultz

Voting for chair and secretary of TAMOC closed on July 31, and the final tally of an exceedingly close balloting indicates that Klaus

Bartschat (Drake University) and Micheal Cavagnero (University of Kentucky) have been elected to these offices, respectively. We heartily congratulate them and wish them success in reaching out to and serving both the theoretical and experimental AMOP communities. Sincere thanks are owed as well to Mitch Pindzola (Auburn University) and Charles Weatherford (Florida A&M University) who also stood in this election and whose qualifications and dedication would have, and will still, add to interactions involving TAMOC. Finally, we wish to thank the DAMOP community for their support over the past three years and especially those who served on the TAMOC panels on job opportunities, funding opportunities, and federal funding for AMOP.

DAMOP COMMITTEES FOR 1997-98

The following are the members of our DAMOP committees for 1997-98. We are grateful to these members for their willingness to serve and for their efforts on our behalf. Committee members will be happy to receive input or provide information

Executive Committee

- Kate Kirby (Chair)
- Carl Wieman (Chair Elect)
- Steve Lundeen (Vice Chair)
- Gordon Drake (Past Chair)
- Barry Dunning - (Sec./Treas.)
- Gordon Dunn (Div. Councilor)
- Eric Heller (Div. Councilor)
- Nora Berrah
- Tim Gay
- Marsha Lester
- Steve Manson
- Tom Rescigno
- Thad Walker

Nominating Committee

- Keith MacAdam (Chair)
- Gordon Berry
- Paul Julienne
- Ron Phaneuf
- Janine Shertzer

Fellowship Committee

- Steve Lundeen (Chair)
- Charlotte Fischer
- Jim Lawler
- Pierre Meystre
- Robin Shakeshaft

Publications Committee

- Lew Cocke (Chair)
- Charles Havener

- Robert Jones
- Marjatta Lyyra
- Don Madison
- Tom Mossberg

Thesis Award Committee

- Carol Tanner (Chair)
- Wendell Hill
- Mike Morrison
- Hossein Sadeghpour
- William van Wijngaarden

Program Committee

- Carl Wieman (Chair)
- Ennio Arimondo
- Norman Bardsley
- Phil Bucksbaum
- Robert Gordon
- Randy Hulet
- Winifred Huo
- Dennis Lindle
- Fred Meyer
- Pierre Meystre
- Bill McConkey
- Steve Pratt
- Luis Orozco
- Thad Walker
- Kate Kirby (ex-officio)
- Steve Lundeen (ex-officio)
- Barry Dunning (ex-officio)

FLANNERY ELECTED TO ROYAL IRISH ACADEMY

Congratulations to Ray Flannery who was recently elected an Honorary Member of the Royal Irish Academy. The Academy was founded in 1785 for "promoting the study of science, polite literature and antiquities." Honorary memberships in the Academy are limited to 30 members within the science section.

NIST PRECISION MEASUREMENT GRANTS

Applications are being solicited for two new Precision Measurement Grants, sponsored by the National Institute of Standards and Technology, to be awarded beginning 1 October 1998 (Fiscal Year 1999). Each grant is in the amount of \$50,000 per year, renewable for up to two additional years, for a total of \$150,000. NIST sponsors these grants to encourage research by U.S. university and college faculty members in the field of precision measurement and fundamental constants and to foster contacts between NIST scientists and such faculty members actively engaged in such work. Candidates' pre-proposal summaries and biographical information

must reach NIST by 2 February 1998 to be considered for the FY 99 awards. For more information, contact Barry N. Taylor, Chairman, NIST Precision Measurement Grants Committee, National Institute of Standards and Technology, Building 225, Room B161, Gaithersburg, MD 20899-0001, (301) 975-4220, barry.taylor@nist.gov.

Related Future Meetings

- The Ninth International Symposium on Resonance Ionization Spectroscopy and Its Applications (RIS-98) is scheduled for June 21-25, 1998, at the Manchester (UK) Conference Centre. The University of Manchester Institute of Science and Technology will host the conference, which is co-sponsored by the University of Tennessee Institute of Resonance Ionization Spectroscopy.

This bi-annual conference investigates the possibilities of RIS, an ultra-sensitive analysis technique pioneered in the 1970s.

Please address any inquiries about the conference to:

The University of Tennessee Institute of RIS
401 Nielsen Physics Building
Knoxville, TN 37996-1200
(423) 974-8950 (tel.)
(423) 974-7843 (fax)
jeparks@utk.edu

- A conference on Atomic Processes in Plasmas, 11th Topical APS Conference, will be held March 22-26 at Auburn, AL. The purpose of this conference is to provide a forum for those involved in research areas of overlap between atomic physics and plasma physics. For further information see the conference homepage at <http://www.physics.auburn.edu/APP98/>.
- The 12th International Conference on Vacuum Ultraviolet Radiation Physics VUV XII will be held August 3-7, 1998 in the Hyatt Union Square Hotel, San Francisco, CA. Inquiries and requests to be included on the mailing list should be sent to Elizabeth Saucier, VUV 12 Conference Administrator, E. O. Lawrence Berkeley National Laboratory, MS 80-101, Berkeley, CA 94720: e-mail: vuv12@lbl.gov. The Conference web page address is <http://www.als.lbl.gov/als/vuv12/>. Detailed questions can be addressed to the Chair of the Local Committee, Fred Schlachter, (510) 486-4892, e-mail, Fred.Schlachter@LBL.GOV.
- The Sixth European Conference on Atomic and Molecular Physics (ECAMP VI) organized by the Atomic and Molecular Physics Division of the European Physical Society will be held July 14-18 in Siena, Italy. The Conference topics include atomic and molecular spectroscopy, and the interactions between ions, atoms, molecules electrons, positrons and photons. Symposia on synchrotron radiation and femto-second laser spectroscopy will be included. For more information see

the conference homepage at <http://www.unisi.it/fisica/ecamp98/welcome.cfm>

Newsletter Input

If you have any information, ideas, announcements, etc. that are of general interest to DAMOP members, please send them to me at any time.

Barry Dunning

e-mail: fbd@rice.edu

FAX: (713) 285-5143