

What's This? Answer on Page 6.

Newsletter of the
DIVISION OF ATOMIC, MOLECULAR, & OPTICAL PHYSICS
 of the
American Physical Society
 May, 1992

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Chair's Letter

Proposed Award for Thesis Research in AMO Physics

I am very pleased to present the first (unofficial) announcement of a new award that the DAMOP has proposed to honor excellence in doctoral research in AMO Physics. For the past two years, the executive committee has deliberated various aspects of this award, and this year I chaired a small subcommittee that hammered out the details. The final proposal has been submitted to the APS for approval at the April Council meeting.

The purpose of this award is to recognize doctoral thesis research of outstanding quality and achievement in atomic, molecular, or optical physics and to encourage effective presentation of research results. The award, to be given annually, will consist of \$1,000 and a certificate citing the contribution made by the recipient. The permanent record of past winners will be published annually as part of the program of the DAMOP meeting. Nominees may be doctoral students at any university in the United States or abroad who have submitted a thesis dissertation for the Ph.D. in the disciplines of atomic, molecular, or optical physics not more than 12 months before the nomination deadline. Nominees will be asked to submit an abstract for presentation at the DAMOP meeting. Based on their entire nomination package (letter of nomination and seconding letters, curriculum vitae, and a specially prepared 1,500-word manuscript prepared by the nominee describing the research to be presented), a six-member Selection Committee representing all areas of AMO physics will choose finalists. These finalists will be required to present their work orally in a special invited paper session at the DAMOP meeting, which will be devoted solely to such presentations. The number of finalists will be limited to those who can be accommodated in one session, with the time for each presentation and discussion being approximately 30 minutes. The Selection Committee will choose the winner from among the

finalists based on both the oral presentation and the written material.

We are quite enthusiastic about this award, which we believe will reward excellence in doctoral research, will encourage effective written and oral communication of research results, and will highlight the work of the very best and brightest graduate students in AMO physics at a special invited paper session at the DAMOP meeting. Fund raising for the award will commence following Council approval of the proposal; with luck, we will bestow the first award at the 1993 DAMOP meeting in Reno. Further details (and the inevitable request for contributions to the award endowment) will be given at the forthcoming DAMOP meeting in Chicago.

Publications and Electronic Newsletters of Interest

Currently almost every scientific community is involved in discussions of science policy, funding, and priority setting. The DAMOP is no exception. This year, the NRC FAMOS (Future Opportunities in AMO Science) Panel will host a Town Meeting at the DAMOP at which many of these issues will be discussed. A popular (and perhaps accurate) rumor suggests that many physicists are politically naive in matters of science policy and funding and in techniques for effective communication with policy makers, funders, and the general public. If you feel that you are one of the politically impaired, or if you would like to broaden your perspectives, I list below a number of publications and electronic newsletters that will provide you with a useful general background. This background is necessary to understand the basis for science policy decisions and it is essential if we are to determine how, when, and if to set priorities within AMO science, within the physics community, and within the larger scientific community. Most of the publications I obtained free by phoning the appropriate office.

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Chair's letter

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Science and Engineering Indicators - 1991. (NSB 91-1). The 10th biennial edition of NSF's compendium of statistics on research and development includes trends in R&D spending by federal agencies and industry, student enrollment and test scores, geographic distribution of academic R&D funds, professional employment by discipline, survey funding on public attitudes toward science and engineering and technology, and much more. It has been called the standard source of data in Washington science-policy decisions. Available from NSF, Division of Science Resources Studies, Suite L-609, 1800 G. Street, N.W., Washington, D.C. 20550. Telephone: (202) 634-4300.

Selected Data on Federal R&D Funding by Budget Function: Fiscal Years 1990-1992. (NSF 91-319). Available from NSF, Division of Science Resources Studies, 1800 G. Street, N.W., Washington, D.C. 20550. Telephone: (202) 634-4634.

Science and Engineering Research Benefits. (NSF 91-57). A glossy publication of the NSF aimed at the general public. Available from NSF, Office of Legislative and Public Affairs, 1800 G. Street, N.W., Washington, D.C. 20550. Telephone: (202) 357-9498.

Research Briefing on Selected Opportunities in Atomic, Molecular, and Optical Sciences. (National Academy Press, 1991). Written by **Gordon Dunn**, this booklet provides an overview of the nature and character of the AMO field and discusses selected opportunities and highlights at the forefront of research in the field. The response to earlier advertisements in the DAMOP newsletter has been heavy; get your copy now while supplies last. Available from **Pat Dehmer** via Email (B21470@ANLVM) or from **Gordon Dunn**, JILA, Campus Box 4400, University of Colorado, Boulder, Colorado 80309.

Setting Priorities for Space Research — Opportunities and Imperatives. (National Academy Press, 1992). This is a recent example of a publication describing opportunities and priorities within a scientific subdiscipline; it discusses various aspects of priority setting. Available from National Research Council, Space Studies

Board, 2101 Constitution Avenue, N.W., Washington, D.C. 20418. Telephone: (202) 3344-3477.

What's New. The weekly one-page electronic newsletter *What's New* is prepared as a service to the physics community by APS Public Affairs Director **Robert Park** and covers the Washington scene. It is often irreverent and always fun to read. It appears each Friday by 5:00 p.m. Eastern Standard Time. It can be accessed on Telenet by using the procedure described in *APS News* 1(4), 82 (April 1992).

FYI. The American Institute of Physics (AIP) issues an electronic newsletter called *FYI*. Like *What's New*, it provides summaries of science policy

development. It is issued at least weekly, but often there are two or more issues per week. It is more editorially neutral than *What's New* and frequently provides more in depth coverage of specific events. The AIP also provides many other free information products and services. These are detailed in *FYI No. 1* (January 3, 1992). To receive *FYI No. 1* and to be put on the distribution list to receive *FYI* electronically, contact **Audrey Leath**, Liaison, Government and Institutional Relations, American Institute of Physics at (202) 234-7058 (office); (202) 328-3729 (fax); fyi@pinet.aip.org (Email).

—Pat Dehmer
Argonne National Laboratory

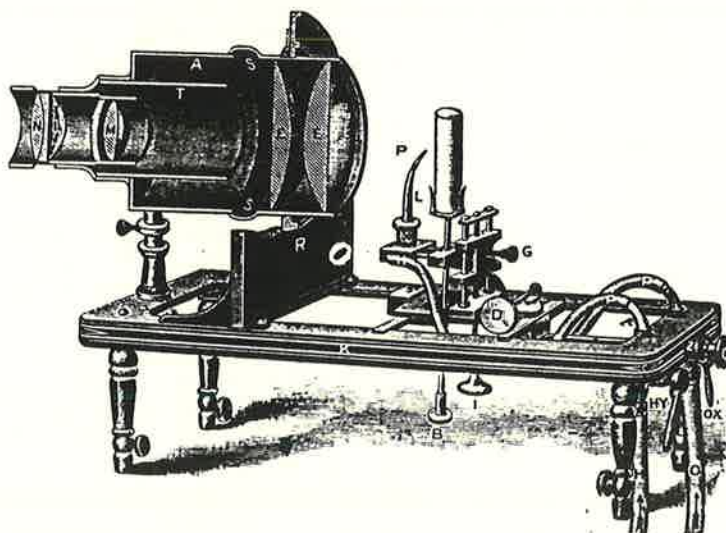
Election Results

CHAIR-ELECT: Tom Gallagher has been elected. Tom will be DAMOP Chair in 1993-4, following **Dave Wineland** who takes office as Chair at the conclusion of our annual meeting on May 22. Next year Tom will serve as Chair of the Program Meeting in Washington in 1994.

VICE-CHAIR: Chun Lin will become Vice-Chair.

Chun follows Tom Gallagher by one year.

EXECUTIVE COMMITTEE: Chris Greene and Roberta Saxon will serve three-year terms, **Tom Lucatorto** will serve a two-year term, and **John Delos** will serve for one year. The Executive Committee advises the officers on (usually) important issues before DAMOP.



FAMOS Committee Seeks Your Views

As regular readers are well aware, an assessment of atomic, molecular, and optical physics is currently being carried out by the National Research Council (NRC) Panel on the Future of Atomic, Molecular, and Optical Physics, chaired by **Neal Lane** (Rice University) and **Gordon Dunn** (University of Colorado). The charge to the committee and the context of the study have been discussed in previous newsletters. Since one of the important and controversial charges involves the setting of priorities, from a variety of perspectives, within our discipline, it is essential that the FAMOS committee receive broad input from the AMO Science community. One forum for that input will be the Town Meeting planned for the Annual DAMOP Meeting in Chicago (see page 4). In addition, however, the FAMOS committee would be pleased to receive written input from any interested community members. Some of the questions to be addressed are:

What are the key achievements of the past decade in AMO science, and how are they relevant to national needs?

What new technologies or facilities promise major advances in the next decade?

Are there specific unsolved problems or research opportunities which could have a major impact if attacked in a concentrated way?

How healthy is the infrastructure for AMO science in the U.S.? What should be the highest priority in improving its health?

How does the U.S. effort in AMO science compare with work going on elsewhere in the world?

The FAMOS Committee would welcome your views on any or all of these questions. Please address your comments to:

FAMOS
c/o Ronald H. Taylor
National Research Council
2101 Constitution Avenue
Washington, DC 20418

or to any member of FAMOS (see November 1991 DAMOP Newsletter).

New Fellows

Members of DAMOP selected this year for fellowship in the American Physical Society are:

Thomas Harold Bergeman
Mau Hsiung Chen
Gerald Gabrielse
William Ray Garrett
Albert Peet Hickman
Winifred M. Huo
Indrek Martinson
Althel Lavelle Merts
Hendrik Jan Monkhorst
David John Pegg
Robert S. Van Dyck, Jr.
Joseph T. Verdeyen

The certificates will be awarded at our annual meeting. We congratulate these new fellows for their outstanding contributions to physics.



NSF's budget is up 18% overall . . .

\$ Millions	1993 ^a	1992 ^a	1991 ^b	% change 1992-93
Mathematical & physical sciences	\$ 726.0	\$ 623.1	\$ 564.1	17%
Education & human resources	479.5	465.0	321.9	3
Geosciences	472.4	404.4	367.7	17
Biological sciences	320.6	274.3	255.1	17
Engineering	312.5	258.5	237.7	21
Computer & information science & engineering	272.2	210.9	189.5	29
Antarctic program	163.0	88.4	175.1	84
Salaries & expenses	135.0	109.1	100.9	24
Social, behavioral, & economic sciences	107.8	85.9	79.2	25
Academic research facilities & instrumentation	33.0	33.0	39.0 ^c	0
Inspector General	4.0	3.9	2.9	3
TOTAL	\$3026.0	\$2557.0	\$2333.1	18%

. . . with funding for the sciences up 14% . . .

\$ Millions	1993 ^a	1992 ^a	1991 ^b	% change 1992-93
Ocean sciences	\$ 206.4	178.8	\$ 164.6	15%
Materials research	167.5	143.6	134.1	17
Atmospheric sciences	151.9	127.2	116.6	19
Physics	148.6	138.4	130.0	7
Chemistry	126.0	112.3	104.7	12
Astronomical sciences	120.0	112.3	100.0	7
Molecular & cellular biosciences	95.5	82.9	76.7	15
Integrative biology & neurosciences	88.5	77.1	72.4	15
Earth sciences	88.1	76.2	70.8	16
Environmental biology	86.5	72.7	68.3	19
Mathematical sciences	85.0	78.6	73.1	8
Social, economic sciences	49.1	40.5	35.9	21
Behavioral, cognitive sciences	24.9	22.2	20.7	12
TOTAL	\$1438.0	\$1262.8	\$1167.9	14%

(Source: C&E News, February 10, 1992 and NSF.)

Program of the 1992 Annual Meeting of the Division of Atomic, Molecular, and Optical Physics

Chicago, Illinois
20-22 May 1992

Preamble

The 23rd Annual Meeting of the Division of Atomic, Molecular, and Optical Physics (DAMOP) will be held in Chicago, Illinois on 20-22 May 1992. These dates are the Wednesday through Friday immediately preceding the Memorial Day weekend. The host institution is Argonne National Laboratory, and the Local Organizing Committee includes **Yoshiro Azuma, Nora Berra-Mansour, Gordon Berry** (Chair), **Steve Berry, Joe Dehmer, Pat Dehmer, Bob Dunford, Don Gemmell, Mitio Inokuti, Elliot Kanter, Mineo Kimura, Eugene Livingston, Steve Lundeen, Elizabeth McCormack, Steve Pratt, Charles Rhodes, John Tanis, and Linda Young**. Partial support for the meeting is being provided by The University of Chicago Board of Governors for Argonne National Laboratory, by Argonne's Division of Educational Programs, by the Associate Laboratory Director for Energy, Environmental, and Biological Research, and by the Associate Laboratory Director for Physical Research.

The scientific program consists of an opening plenary session featuring talks by **Arthur Schawlow, Larry Spruch** (winner of the 1992 Daviss-Germer Prize) and **Jim Lawler** (winner of the 1992 Will Allis Prize), 12 symposia, 11 sessions of contributed oral papers, and four sessions of contributed poster papers. More than 450 contributed papers were received by 10 February, the date that the abstracts were sorted into sessions. This unexpectedly large number of papers is 30% greater than the number received in recent years and required the addition of one extra poster session and one extra oral session. With very rare exceptions, abstracts that requested an oral session and were received by the 7 February deadline date were so scheduled; all abstracts received after the deadline date (on 10 or 11 February) were scheduled in poster sessions. The Program Committee that planned the symposia for this meeting included **Jim Bayfield, Bernd Crasemann, Pat Dehmer** (Chair), **John Delos, Barry Dunning, Rick Freeman, Tom Gallagher, Andy Hazi, Kate Kirby,**

Peter Lambropoulos, Steve Leone, Steve Lunden, Keith McAdam, Jim McGuire, Ron Phaneuf, Dave Pritchard, Tony Starace, and Bill Stwalley. The scientific sessions for this meeting were arranged by **Joe Dehmer, Pat Dehmer, Bob Dunford, Elliot Kanter, Jim McGuire, Steve Pratt, and Dave Wineland**.

All scientific sessions and scheduled social events will be held at the Westin Hotel (909 North Michigan Avenue) on Chicago's famed Magnificent Mile. The hotel is exceptionally well-located (next to the Hancock Tower) and provides convenient access to the best that Chicago has to offer, including fine restaurants, museums, art galleries, the symphony and theater, night life, shopping, professional sports, and the Lake Michigan beaches. An orientation session for accompanying persons will be held early in the meeting and literature will be provided to acquaint participants and their guests with the complete array of sightseeing possibilities.

Registration

The registration fee for the conference will cover all costs, including the reception, coffee breaks, and the banquet dinner. The 1 April deadline for preregistration is past. The fees are now as follows: members - \$175; non-members - \$265; students - \$50; guests - \$30. Advanced registration will be greatly appreciated by the Local Committee. Registration will be held in the Wellington Foyer on the second floor of the Westin Hotel on Tuesday, 19 May from 16:00 until 21:00; from 7:00 to 17:00 on Wednesday, 20 May; and from 8:00 to 17:00 on Thursday, 21 May and Friday, 22 May.

Telephone messages can be left for Conference participants by calling the Westin at (312) 943-7200 and asking for the DAMOP Registration Desk. The FAX number for the Westin is (312) 943-9347.

Accommodations

Approximately 300 rooms have been reserved at the Westin for meeting participants. Unusually attractive room rates have been obtained for our meeting. Single rooms are \$82 plus tax

per night; double rooms are \$92 plus tax per night. Write directly to the hotel to make reservations. **You must make hotel reservations before 28 April to obtain these conference rates.**

Travel

Chicago is easily reached by air via either O'Hare International Airport or Midway Airport. The official airline for the conference is United Airlines, which is offering special reduced fares for conference attendees. These fares will be applicable for travel between 17 May and 24 May. To take advantage of these fares, you (or a travel agent) should call United at 1-800-521-4041 and refer to meeting account number 522AE.

Continental Air Transport provides "Airport Express" bus service from O'Hare (and Midway) to the Westin (45-60 minutes travel time) via the "Gold Coast" route departing from the lower level baggage claim areas every half hour between 6:00 and 23:30 (21:30 at Midway). Tickets may be purchased at the Continental desks located near doors 1E, 2D, and 3E in the United, Northwest, and American Airlines terminals at O'Hare, respectively. Passengers arriving at Midway Airport may purchase tickets at the Continental desk located in the baggage claim area at the south end of the terminal. Fares are \$12.50 one way and \$22.00 round trip from O'Hare; \$9.50 one way and \$16.75 round trip from Midway.

Taxis are located on the lower level of each terminal at O'Hare. Fares are \$18-22; share a cab with two friends and the fare is \$12 per person.

The Chicago Transit Authority (CTA) provides inexpensive transportation around the city. CTA trains operate between O'Hare Airport and downtown (approximate time: 40 minutes). The fare is \$1.50 and the CTA station at O'Hare is located under terminal #4. It may be reached by motorized pedestrian walkways leading from the baggage claim areas of each terminal. Exit from the O'Hare line at the Washington/Dearborn station. Then take the Howard line north two

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stops to the Chicago Avenue/State Street station. The Westin Hotel (located at the corner of Michigan Avenue and Delaware Place) is three blocks east and three blocks north of the station. Alternatively, you may request a bus transfer (.30¢ extra) when you pay your fare at the CTA O'Hare station and follow the directions above, but exit the CTA at the Washington/State station. Then board either the #145, #146, or #151 buses northbound. These each stop in front of the hotel.

Special Events

Tuesday, 19 May

- The opening night reception will be held in the Wellington Ballroom from 18:00 to 21:00.
- A meeting of the Theoretical Atomic, Molecular, and Optical Physics Community (TAMOC) will be held from 19:30 to 22:00 in the Buckingham Room. Topics of discussion include opportunities and challenges facing the AMO community. All interested AMO scientists are invited to attend.

Wednesday, 20 May

- A drop-in hour for *Physical Review A1* and *Physical Review Letters* will be held from 11:00 to 12:30 in the Windsor Room. The editors of *Physical Review A1* and *Physical Review Letters* will be available to answer questions and share concerns about the journals. All are welcome. Light refreshments will be served.
- The Committee on Atomic, Molecular, and Optical Sciences (CAMOS) of the National Research Council has formed a Panel on Future Opportunities in Atomic, Molecular, and Optical Sciences (FAMOS) to conduct an assessment of AMO sciences in the U.S. The study is a successor to the relevant portions of the Brinkman Report, and it will articulate the immediate needs and opportunities of this diverse community. In the present political environment, where priority setting is increasingly required, a key element in the Panel's charge is to identify priorities from a variety of perspectives that reflect the views of the AMO physics community.

To be successful, the FAMOS Panel must have broad input from the membership of DAMOP, and, as an initial step, it has organized an open Town Meeting from 17:00 to 18:30 in the Buckingham Room. All DAMOP members are encouraged to attend. Questions to be addressed include:

- What are the greatest difficulties facing researchers in AMO science today?
- What are the most important scientific developments in AMO science since 1980?
- How can AMO science contribute to national need?
- What new technologies promise major advances in AMO science during the next few years?
- What is the most important thing that the FAMOS report could do to improve AMO science?

- Symposium D2 on H_2 excited states will be a memorial session for Frank Pipkin (Harvard University) who passed away this January.

- During the evening sessions, the conference organizers will host a social from 20:00 to 22:00.

Tuesday, 21 May

- A meeting of potential users of "Future U.S. Synchrotron Facilities" will be held in the Consulate Room from 11:30 to 12:30.
- The annual Business Session of the Division of Atomic, Molecular, and Optical Physics will be held from 17:00 to 18:30 in the Buckingham Room. All are invited to attend.
- The Conference Banquet will be Thursday evening. A reception will be held in the Cotillion Room from 18:30 to 19:30, followed by dinner in the Wellington Ballroom. Following dinner, fellowship certificates will be awarded to the newly elected Fellows in the Division.

Contributed Paper Sessions

Posters will be on display in the Cotillion Room. Posters should be prepared to fit an area 4' high by 8' wide. Posters for Sessions B1, F1, and J1 should be put up at 9:00 and be removed by 15:00 each day. Posters for Session D4 should be put up at 17:00 and removed by 23:00 on Wednesday.

Both overhead and 35-mm slide projectors will be available for all oral sessions.

Further Information

For additional information, please contact H. G. Berry, Physics Division, Argonne National Laboratory, Argonne, IL 60439, or by electronic mail DAMOP@ANLPHY (BITNET) or DAMOP@ANL.Gov (Internet).

EPITOME

Personal names in **bold face** type are those of invited speakers. All sessions take place on the second floor of the Westin Hotel.

TUESDAY EVENING

- 18:00 Reception. Wellington Ballroom
- 19:30 Meeting of the Theoretical Atomic, Molecular, and Optical Physics Community (TAMOC). Buckingham Room.

WEDNESDAY MORNING

- 8:30 A1 Plenary and Award Session. **Schawlow, Spruch, Lawler.** Wellington Ballroom.
- 11:00 B1 Poster Session I. Cotillion Room.

WEDNESDAY AFTERNOON

- 14:00 C1 High Field Effects. **Shakeshaft, Bucksbaum, Kulander, Kmetec.** Cambridge Room.
- 14:00 C2 Measurement and Cavity QED. **Hulet, Zoller, Haroche, Meystre.** Oxford Room.
- 14:00 C3 Atomic and Molecular Spectroscopy. Buckingham Room.
- 14:00 C4 Heavy Particle Collisions. Consulate Room.
- 17:00 Town Meeting Hosted by the Panel on Future Opportunities in Atomic, Molecular, and Optical Sciences (FAMOS). Buckingham Room.

WEDNESDAY EVENING

- 19:00 D1 Advances in Electron Scattering. **Madison, Martin, Morrison, Chutjian.** Cambridge Room.
- 19:00 D2 H_2 Excited States: New Perspectives from High Resolution Experiments. **McCormack, Arcuni, Glab, Mitchell.** Oxford Room.
- 19:00 D3 Theory. Buckingham Room.
- 19:00 D4 Poster Session I. Cotillion Room.

THURSDAY MORNING

- 8:30 E1 Coherent Control of Physics and Chemistry. **Rice, Brumer, Warren, Elliott.** Cambridge Room.
- 8:30 E2 Atomic Inner-Shell Phenomena. **Caldwell, Becker, Aberg, Chen, Pratt.** Oxford Room.



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- 8:30 E3 Rydberg Atoms.
Buckingham Room.
- 8:30 E4 Collision Theory. Consulate Room.
- 11:00 F1 Poster Session III. Cotillion Room.
- 11:30 Informal Discussion of Opportunities at New Synchrotron Facilities. Consulate Room.

THURSDAY AFTERNOON

- 14:00 G1 Femtosecond Dynamics. Walkup, Schoenlein, Gerber, Rabitz. Cambridge Room.
- 14:00 G2 Physics of Two-Electron Systems. Sandner, Berrah-Mansour, Sadeghpour, Briggs. Oxford Room.
- 14:00 G3 Cooling and Trapping. Consulate Room.
- 17:00 H1 Business Session of the Division of Atomic, Molecular, and Optical Physics. Buckingham Room.
- 18:30 Reception. Cotillion Room.
- 19:30 Conference Banquet. Wellington Ballroom.

FRIDAY MORNING

- 8:30 I1 At the Frontiers of Technology in Coherent Photon Generation. Mossberg, Mourou, Hase, Saykally. Cambridge Room.
- 8:30 I2 Particle-Surface Interactions. Bruggdorfer, Cooper, Meyer, Walters. Oxford Room.
- 8:30 I3 Electron and Positron Scattering. Buckingham Room.
- 8:30 I4 High Field Effects. Consulate Room.
- 11:00 J1 Poster Session IV. Cotillion Room.

FRIDAY AFTERNOON

- 14:00 K1 Atom Interferometry. Riehle, Kasevich, Ekstrom, Thomas. Cambridge Room.
- 14:00 K2 Plasma Processing and Associated Atomic Process. Gallagher, Anderson, Gottscho, Graves. Oxford Room.
- 14:00 K3 Accelerator Based Atomic Physics and Instrumentation. Buckingham Room.
- 14:00 K4 Nonlinear Dynamics. Consulate Room.

Answer to 'What's This?'

The first well resolved electronic shape resonance in negative ions. This is the $\text{He}^- 1s2p_{2,4}\text{Pe}$ resonance above ${}_3\text{P}$. In fact it is still the only one resolved except for the not-yet-published $4s4p_{2,2}\text{D}$ resonance in Ca^- . The fitted curve is an approximate modification of the Wigner threshold law, and was derived to account for effects of the resonance [Peterson, Bae, and Huestic, *Phys. Rev. Lett.* 55, 192 (1985).]



Conferences and Workshops

JILA, July 22-25

A workshop entitled "New Developments and Challenges in Two-electron Atoms and Ions" will be held at Boulder, Colorado, July 22-25, 1992. This workshop is supported by the AMO Theory Center at JILA through a grant from the National Science Foundation. Subjects to be addressed at the workshop include: Classifications and Experiments on Doubly Excited States, Numerical Methods, Threshold Impact Ionization, Semiclassical Quantization, and (e, 2e).

This workshop is being organized by C. D. Lin and Shinichi Watanabe. If you are interested in attending this workshop, contact C. D. Lin by e-mail (CDLIN at KSUVM.bitnet; CDLIN at KSUVM.KSU.EDU), by fax (913-532-6806) or by phone (913-532-6786).

Program for Nuclear Physics in Atoms and Molecules (approximately mid-February through May, 1993)

This program at the Institute for Nuclear Theory in Seattle, Washington, will be concerned with problems in atomic and molecular theory that are of importance to nuclear physics. The relationship between atomic physics and nuclear physics is a two-way street. The two fields first made contact in atomic spectroscopy, through generally small effects on atomic energy levels, which originate from the "external" properties of nuclei, i.e., the finite size and the shape of nuclei, and nuclear moments (hyperfine structure). Internal conversion and inner-shell electron and muon capture were early manifestations of dynamic nuclear processes that involve the atomic environment.

All of these processes are still topical, because enormous progress in precision of experiment measurements in atomic spectroscopy has called for very sophisticated structure calculations for complex atoms, and advances in computing have made such calculations feasible. At the same time, our detailed knowledge of medium and heavy nuclei has progressed, and the Standard Model has provided a unified basis for understanding the interplay between atomic and nuclear processes. Today it is simply no longer possible or necessary to regard the nucleus in isolation from its atomic, molecular, or condensed-matter environment.

The 10th INT Program, planned for Spring 1993, will focus on several topics at the interface of atomic and nuclear physics:

1. Weak interaction effects in atoms. Violations of discrete symmetries. Atomic spectroscopy as a probe of weak interactions.

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2. Effects of atomic electrons (and muons) on nuclear beta decay. The neutrino mass problem Beta Environmental Fine Structure (BEFS).

3. Electron screening of nuclear reactions as seen in atoms, molecules, plasmas. Astrophysic implications. The use of "atomic clocks" to measure nuclear lifetimes.

4. Theory of muonic and hadronic atoms. Atomic manifestations of particle-nucleus interactions.

5. Muon-catalyzed fusion and its atomic and molecular aspects.

6. Nuclear size and shape effects in atomic spectroscopy.

7. Atomic and QED effects in nuclear collisions.

The program will include participants who are established researchers,

beginning ones, and advanced students. Although some short-term visitors can be invited, the program is built on the participation of a number of atomic and nuclear physicists who are prepared to be present for the full duration of the program.

Address inquiries to the organizers:

Eugen Merzbacher
Department of Physics
and Astronomy
University of North Carolina,
CB#3255

Chapel Hill, NC 27599-3255

Tel (919) 962-3021

FAX (919) 962-0480

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Optical Society of America

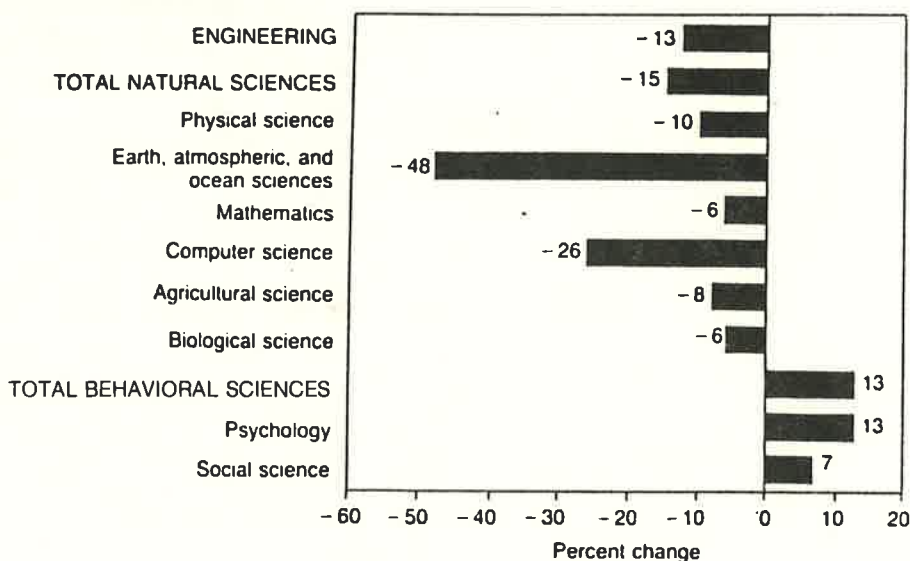
The 1992 annual meeting will be September 20-25, 1992 in Albuquerque, NM.

Laser Science Topical Group

This group will also meet in Albuquerque September 20-25.



Percent change from 1986 to 1989 in number of S/E baccalaureates awarded, by field



NOTE S E = science and engineering

SOURCE National Science Foundation SRS

NSF 91-102



The International System of Units (SI)

NIST Special Publication 330, 1991 Edition, is the United States of America edition of the English-language translation of the sixth edition of *Le Systeme International d'Unites (SI)*, the definitive reference on the SI published in 1991 by the International Bureau of Weights and Measures (BIPM) in the French language. The USA edition, edited by Barry N. Taylor, conforms in substance with the English-language translation that follows the French-language text in the BIPM publication. Single copies may be obtained from Carolyn Stull, Room C210, Bldg. 245, National Institute of Standards and Technology, Gaithersburg, MD 20899, (301) 975-5607.



News, Announcements and New Memberships

Please contact Jim McGuire concerning items of interest for the Newsletter or new membership. New membership is encouraged since we are a handful of people short of the 6% lower limit of APS membership needed to retain two APS divisional councilors.



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