

Newsletter of the
DIVISION OF ATOMIC, MOLECULAR AND OPTICAL PHYSICS
of the
American Physical Society
February, 1994

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Chair's Corner:

by Tom Gallagher

In the last Newsletter, I raised the issue of possible joint meetings. The response was both positive and gratifying. There is definite enthusiasm for having some meetings with a broader scope, with the strongest support for more molecular physics. We are thus led to the perennial question of when to have such a meeting.

The Division of Chemical Physics (DCP) holds its annual meeting at the March APS Meeting, and the Laser Science Topical Group (LSTG) has an absolute commitment to the Conference on Lasers and Electro-Optics (CLEO) in May and has its annual meeting in the fall. Both groups have suggested that a joint meeting in the fall would be very attractive. To me, the fall appears to be the most reasonable time to hold our meeting, for then we could easily connect with these two groups, and perhaps the Gaseous Electronics Conference (GEC) as well. In most previous polls, DAMOP has rejected a fall meeting date in favor of one in the Spring. Is the fall still so unpopular? An alternative, less wrenching, change is to leave the DAMOP Meeting in May, and try to convince the gas-phase constituent of DCP to join us every year or so. LSTG participation is ruled out in this approach.

I would appreciate hearing your thoughts on this issue. If you are adamantly opposed to moving the meeting, you definitely should tell me!

1994 Davisson-Germer and Will Allis Prizes Announced

DAMOP congratulates Carl Wieman of JILA, Boulder, Colorado, who has been named the 1994

winner of the Davisson-Germer Prize. Carl is cited for *pioneering contributions to atomic physics including the development of both ultra-precise measurements of atomic parity nonconservation as critical tests of the Standard Model, and remarkable new techniques for trapping neutral atoms.*

We also congratulate Eldon Ferguson of NOAA, also in Boulder, who has been named the winner of the 1994 Will Allis Prize in ionized gas physics. Eldon is cited for *his pioneering development and application of the flowing afterglow technique to provide detailed microscopic understanding of low-energy ion-molecule interactions of importance in weakly ionized gases and ionospheric physics.*

Both Wieman and Ferguson are scheduled to give plenary invited talks in the DAMOP Prize-Winner's Session in Crystal City, Virginia on Monday April 18. The prizes will be bestowed at the conference banquet on Wednesday evening, April 20 by APS President, Donald Langenberg.

E. O. Lawrence Award

Carl Wieman of JILA was also recently honored by the U.S. Department of Energy as one of seven 1993 recipients of the E. O. Lawrence Award, which recognizes outstanding contributions in atomic energy. He was cited for *innovation in the technology of atomic physics research used to measure the electroweak force.* Congratulations!

THERE IS A BALLOT
ON PAGE 10.

PLEASE VOTE! ✓

Second Councillor for DAMOP!

DAMOP received a pleasant surprise in November! We were informed by APS that DAMOP Membership had increased from 2483 to 2606, which constitutes an increase from 5.18% to 6.09% of total APS membership. Clearly DAMOP membership is increasing slightly while that of APS as a whole is decreasing! One benefit of this increase is that the DAMOP membership now exceeds 6% of APS, which is the threshold for a second Divisional Representative on the APS Governing Council.

Our current Divisional Councillor is Dan Larson, who was elected in 1990 and will serve the last year of his four-year term and be replaced in January 1995 by the winning candidate in this year's election. Joe Dehmer was elected as a second DAMOP Divisional Councillor in 1991, but only served one year, since DAMOP'S percentage of APS membership dropped below 6% and we lost our second representative.

After discussing this situation, the DAMOP Officers decided to ask Joe Dehmer if he would be willing to serve through 1996, which would constitute a normal four-year term. The APS has concurred and we are grateful that Joe has graciously agreed to serve us again, effective immediately! This solution will also be optimal from an electoral point of view, since we will be electing a Councillor to a four-year term every two years (*provided we can keep our membership above 6%!*).

Remember, the first year of APS membership for students is still free! Renewing members, don't forget to check DAMOP Membership on your renewal form! The \$5 is a bargain!

1995 and 1996 DAMOP Meetings

The 1995 DAMOP Meeting will be held in Toronto in May, 1995, and will be a joint meeting with the Division of Atomic and Molecular Physics

(DAMP) of the Canadian Association of Physicists. The site of the 1996 DAMOP Meeting has not yet been selected, and the Executive Committee solicits suggestions and proposals from those interested. Hosting the meeting entails a significant amount of effort, but the resulting positive exposure for the host institution has always more than compensated for it!

FAMOS Report

The final report of the Committee on Future Opportunities in Atomic, Molecular and Optical Sciences (FAMOS) was presented to the Board on Physics and Astronomy of the National Research Council by Gordon Dunn in mid-November. The approximately 200-page report was favorably received by the Board, and is being prepared for publication by the National Academies Press. Copies are expected to be available for distribution by the end of January. Because of the limited budget, there will be free distribution of the report by CAMOS only to congressional representatives and research program sponsors. Dan Larson, current CAMOS chair, will have responsibility for distribution. Approximately 600 copies will be available for sale by the National Academies Press. More information may be obtained by contacting:

Dr. Ronald Taylor
Senior Program Officer
Board on Physics and Astronomy
National Research Council
2101 Constitution Avenue
Washington, DC 20418
E-Mail: BPA@NAS.EDU

Student Feedback!

(a letter to the editor)

Hello:

After reading the last DAMOP Newsletter, I thought I'd pitch in a little feedback as someone who is currently doing a Ph.D. Although I am from Canada, the situation here has many similarities to yours, in that new Ph.D. graduates face a bleak outlook in the job market. Our

market is flooded with highly qualified people who are having no luck in finding employment, satisfactory or otherwise.

I feel that there are two reasons for this. First, our graduate programs are rather short-sighted. While the research work being done may be good science, it is not preparing us for the outside world in many cases. The fault lies to an extent with the students, who should choose their programs carefully, but also with supervisors, who should attempt to present students with research options that may help them in the future. It is too often the case that research supervisors have a narrow view of research; their use for graduate students is immediate, being a cheap source of legwork for furthering their research projects and hence, their careers. When the graduate students have finished their degrees, they are disposed of, to be replaced by a new crop. As you mentioned in your newsletter, it is incumbent upon research supervisors to provide skills to make students employable. I believe supervisors should also help them get started.

The second reason is that graduate programs are overloaded. Again, this comes down to the research supervisors. Of course, they will not want to limit enrollment in graduate schools, since they will lose research assistants, but it seems to me that this **MUST** happen soon. Do you know of any unemployed M.D.'s? In Canada, every province monitors how many people are going into and out of medicine and set the number of students to be enrolled accordingly. That way, there will never be a glut of graduates. The same thing should be happening in grad schools. In the mean time, don't be too shocked when you find out that your cab driver has a Doctorate in Particle Physics!

Sincerely,
Jim Peers

Ph.D. Student, Chemical Physics,
University of New Brunswick.

Please consider nominating members of DAMOP for APS Offices!

Congratulations to New APS Fellows!

We are proud to announce and to offer our congratulations to the following DAMOP members who were recently elected to Fellowship in the American Physical Society:

Kurt H. Becker

For his experimental studies of electron collision processes on free radicals, transient species and complex molecules, for coherence parameter measurements in noble gases probing the role of the weaker interactions in scattering.

Carolyn Demise Caldwell

For the first experimental demonstration of atomic alignment in photoionization, continued scholarly exposition of atomic alignment, and the elucidation of autoionization decay processes on approaching inner ionization thresholds.

Katherine B. Gebbie

For pioneering spectroscopic and theoretical studies of radiation transport and departures from local thermodynamic equilibrium in stellar atmospheres. For leadership in strengthening ties between pure and applied atomic physics.

Edward A. Hinds

For demonstrated virtuosity in wide ranging areas of atomic physics, including precision measurements, fundamental symmetries, atom-surface interactions, and polarized samples.

Rainer Johnsen

For his seminal and innovative developments of drift-tube techniques for ion-molecule reactions, and for the high-pressure photoionized afterglow method for ion-ion and electron-ion recombination studies.

Thomas M. Miller

For outstanding research in the fields of atomic collisions, gaseous electronics and molecular structure; for pioneering work in the development of novel techniques in these fields.

Eduardo Chaves Montenegro

For his imaginative and elegant contributions to the study of inner-shell ionization and excitation, and the execution, under difficult conditions, of experiments to test the theoretical expressions.

Herch Moyses Nussenzveig

For his valuable contributions to the theory of light scattering, particularly for the development of a complex angular momentum technique which compliments the classic investigations of Debye and Mie.

Marvin G. Payne

For significant theoretical insight and contributions to the interaction of radiation with matter, superconductivity, non-linear optics, and especially resonance ionization spectroscopy.

Michael Stuart Pindzola

For diverse studies on atomic processes, particularly in complex ions, which have advanced our fundamental understanding of such processes and their role in high-temperature plasmas.

Michael Gordon Raymer

For imaginative contributions to nonlinear quantum optics, notably quantum statistics in stimulated Raman scattering and multimode laser radiation, and time dependence and intense-field effects in atomic resonance fluorescence.

John S. Risley

For his experimental studies of hydrogen negative ions and the density matrices of excited hydrogen atoms, his development of radiometric standards, and his contributions to undergraduate education.

Douglas Howard Sampson

For innovative contributions to the understanding of basic collisional processes in astrophysics and high-temperature plasmas.

Wolfgang Hartwig Sandner

For experimental work leading to significant insights into the correlations between two electrons in atoms.

Fellowship certificates will be presented at the annual DAMOP Business Meeting in Crystal City on April 20. We thank the members of the 1993 Fellowship Committee: Chun Lin (chair), William Cooke, Gordon Dunn, Raymond Flannery and Harold Metcalf.

APS Fellowship Nominations for 1994

All Division members are reminded to submit nominations of colleagues for APS Fellowship by March 18, 1994 to:

**Executive Secretary
The American Physical Society
One Physics Eclipse
College Park, MD 20740-3844**

Fellowship Nomination forms are printed on page 7-8 of the December issue of APS NEWS. To ensure that the nominations reach the DAMOP Fellowship Committee in a timely manner, please indicate on the form that the application should be assessed by DAMOP. If you have questions regarding nominees or procedures, contact the chair of the 1994 DAMOP Fellowship Committee, Richard Freeman at (908)-949-9500 or FAX (908)-949-6010.

Candidates for 1994 AMO Outstanding Doctoral Thesis Award

This year, there were 16 nominations, and the committee found it very difficult to select the following five finalists:

Dmitry Budker

Title of Thesis: *Investigation of Nearly Degenerate Opposite Parity States in Atomic Dysprosium*
Advisor: Eugene Commins, Department of Physics, University of California at Berkeley

Poul Jessen

Title of Thesis: *An Investigation of the Microscopic Motion of Atoms in Optical Molasses Using Optical Heterodyne Spectroscopy of Resonance Fluorescence*
Advisors: William Phillips, NIST, and Ove Poulsen, Department of Physics, University of Aarhus, Denmark

Wei Kong

Title of Thesis: *High Resolution Photoelectron Spectroscopy of Small Molecules Using Coherent Extreme Ultraviolet Radiation*
Advisor: John Hepburn, Department of Chemistry, University of Waterloo, Canada

Michael Renn

Title of Thesis: *Frequency Evolution of Radiatively Assisted Collisions of K Rydberg Atoms*
Advisor: Thomas Gallagher, Department of Physics, University of Virginia

David Weiss

Title of Thesis: *A Precision Measurement of the Photon Recoil of an Atom Using Atomic Interferometry*
Advisor: Steven Chu, Department of Physics, Stanford University

The finalists will present their work in a special session on Monday afternoon at the next DAMOP Meeting, after which the winner will be selected by the AMO Thesis Prize Committee. We congratulate the finalists and thank the committee members: Pat Dehmer (chair), John Miller (vice-chair), Philip Bucksbaum, Howard Carmichael, Chi Dong Lin and John Thomas.

25th Annual Meeting of the Division of Atomic, Molecular and Optical Physics Crystal City, Virginia April 18-21, 1994

This year, DAMOP meets in Washington in conjunction with the Joint April Meeting of the American Physical Society and the American Association of Physics Teachers. The meeting will be held in the Hyatt Regency Hotel in Crystal City, Virginia, which is located near Washington National Airport and is accessible from there by Metro. Other Divisions holding their annual meetings at the April APS Meeting are the Division of Astrophysics and the Division of Physics of Beams. The APS will hold the fourth annual Unity of Physics Day on Wednesday afternoon, during which no divisional sessions will be held. Special plenary symposia will be held on topics of general interest, covering the entire spectrum of physics. Because of this event, DAMOP sessions will be held on Thursday, April 21. **The December issue of APS NEWS contains complete registration and housing information.** It is expected that limited support for travel expenses of students presenting papers at DAMOP will be available once again this year. An application form is included in

this newsletter on page 11.

Other special events at this year's meeting include a tutorial organized by Bill Phillips on Laser Cooling and Trapping of Neutral Atoms, which is to be held on Sunday, April 21 from 1-5 pm. Registration will be on-site. Following the format from last year's meeting in Reno, a DAMOP employment workshop is being organized by Chun Lin and Tom Miller, and will be held during the meeting. In addition to the DAMOP Prize-Winner's Session and the 1994 AMO Outstanding Doctoral Thesis Award Symposium, there will be twelve invited symposia on topics of current interest, as well as contributed oral and poster sessions. The invited sessions are listed on pages 5 and 6.

The APS is once again sponsoring Congressional Visits, a successful DAMOP initiative organized by Mike Lubbell at the 1991 Washington meeting. If you are interested, please contact (before March 31):

APS CONGRESSIONAL VISITS
Office of Public Affairs
529 14th Street, #1050
Washington, DC 20045
(202)-662-8700
E-mail: opa@aps.org

1994 DAMOP INVITED SYMPOSIA

Double Photoionization Processes in the Rare Gases

Monday, 11:00, F. J. Wuilleumier, presiding:

A. Dalgarno, Center for Astrophysics, Cambridge, MA, "*Theory of Double Photoionization in Helium*"

N. Berrah, Western Michigan University, "*Double Photoionization of Helium*"

J. McGuire, Tulane University, "*Brief Overview of the Few Body Dynamics of Matter Interacting with Photons and Charged Particles*"

J. Samson, University of Nebraska-Lincoln, "*Two-Electron Photoionization and Fluorescent Decay Processes in the Rare Gases*"

V. Schmidt, Freiburg University, "*Electron-Electron Coincidence Studies of Double Photoionization in the Rare Gases*"

AMO Outstanding Doctoral Thesis Award Symposium

Monday, 14:30, Norman F. Ramsey, presiding:

Dmitry Budker, University of California, Berkeley, "*Investigation of Nearly Degenerate Opposite Parity States in Atomic Dysprosium*"

Poul Jessen, University of Aarhus, Denmark and NIST, Gaithersburg, MD, "*Quantum Motion in Optical Lattices*"

Wei Kong, University of Waterloo, Canada, "*Studies of Excited States of Ions Using PFI-ZEKE and Coherent XUV*"

Michael Renn, University of Virginia, "*Frequency Evolution of Radiatively Assisted Collisions of K Rydberg Atoms*"

David Weiss, Stanford University, "*A Precision Measurement of $\hbar/m$ Using Atom Interferometry*"

Synchrotron Radiation¹

Monday, 14:30, J. N. Galayda, presiding:

J. Levin, University of Tennessee, "*Time-of-Flight Techniques in Photoionization of Rare Gases*"

H. Wiedmann, Stanford University, "*Coherent Synchrotron Radiation from Short Pulses*"

E. Gluskin, Argonne National Laboratory, "*Insertion Devices as Sources of Elliptically Polarized Radiation - Properties and Uses of This Radiation*"

B.M. Kincaid, Lawrence Berkeley Laboratory, "*First Results from the ALS*"

J. Madey, Duke University, "*Narrow Bandwidth Operation of FEL Oscillators*"

M. Ya. Amusia, Ioffe Institute, "*Many-Body Theory in Photoionization*"

Lepton g-Values and Newtonian Wave Mechanics

Polykarp Kusch Memorial Session

Monday, 14:30, S. Millman, presiding:

H. G. Dehmelt, University of Washington, "*Measuring g-Factors: Probing Atomic and Subatomic Structure Since 1887*"

V. W. Hughes, Yale University, "*The Muon g-2 Value*"

Nanofabrication Using Atom Optics

Tuesday, 8:00, R. J. Celotta, presiding:

C. R. K. Marrian, Naval Research Laboratory, "*Nanofabrication: Limitations and Prospects*"

G. L. Timp, AT&T Bell Laboratories, "*Using Light as a Lens for Neutral Atom Lithography*"

J. McClelland, National Institute of Standards and Technology, "*Laser Focused Deposition of Chromium Nanostructures*"

M. Prentiss, Harvard University, "*Optical Fabrication Using Multiatom Materials*"

Fundamental Symmetries²

Tuesday, 8:00, E. A. Hinds, presiding:

T. Majumder, University of Washington, "*High Precision Measurement of Parity Nonconserving Optical Rotation in Atomic Thallium*"

D. Cho, University of Colorado, "*Polarized Atomic Beam Measurement of Parity Nonconservation in Cesium*"

S. Barr, University of Delaware, "*Super Symmetry and Electric Dipole Moments*"

R. Lewis, University of Michigan, "*Anapole Moments of Atoms and Molecules*"

Cavity QED and Traps

Tuesday, 11:00, Mark Raizen, presiding:

D. Wineland, NIST, Boulder, "*Trapped Ions and the Jaynes-Cummings Model*"

J. Kimble, Caltech, "*Quantum Optics with Atoms Trapped in a Cavity*"

N. Lawandy, Brown University, "*Spontaneous Emission and Laser Action in Strongly Scattering Media*"

L. Orozco, SUNY, Stony Brook, "*⁸⁷Rubidium, Radioactive Atoms in a Magneto-Optic Trap*"

AMO Physics Applied to National Technological Needs

Tuesday, 14:30, D. Madison, presiding:

K. Becker, City University of New York, "*Electron Collisions with Reactive Plasma Radicals*"

P. C. Cosby, SRI International, "*Beam Studies of Dissociative Processes in Small Molecules and Ions Induced by Low Energy Electrons*"

A. Stauffer, York University, "*Use of Atomic Cross Sections in Modeling X-Ray Detectors*"

B. Schneider, National Science Foundation, "*State of the Art of Ab-initio Electron-Molecule Polyatomic Scattering and its Impact on Problems of Technological Importance*"

Rydberg State Collisions and Coherence

Wednesday, 8:00, K. B. MacAdam, presiding:

W. E. Cooke, University of Southern California, "*Experiments on 'Notching' of Rydberg Atoms*"

M. G. Cavagnero, University of Kentucky, "*Novel Theoretical Methods Applied to Collisions of Charged Particles with Rydberg Atoms*" (tentative)

E. Horsdal-Pedersen, Aarhus University, "*Experiments on Ion Collisions with Circular and Elliptical-State Rydberg*"

Atoms" (tentative)

C. D. Lin, Kansas State University, "*Propensity Roles in Ion-Atom Collisions Involving Rydberg Atoms*"

Femtosecond Terahertz Atomic and Molecular Physics

Thursday, 8:00, P. H. Bucksbaum, presiding:

R. R. Jones, University of Virginia, "*Quantum and Classical Behavior of Rydberg Atoms Exposed to Ultrashort 1/2-Cycle Pulses*"

J. Delos, College of William & Mary, "*Effects of 1/2 Cycle Pulses on Electrons in Highly Excited States of Atoms*"

D. R. Grischkowsky, Oklahoma State University, "*High-Resolution Time-Domain Terahertz Molecular Spectroscopy*"

G. Gerber, University of Freiburg, "*Femtosecond Dynamics in Clusters*"

Dynamics of Ultracold Collisions I³

Thursday, 11:00, J. Weiner, presiding:

C. Williams, University of Chicago, "*What do Cold Atoms Do When They See the Light?*"

D. Heinzen, University of Texas, "*Photoassociation of Cold Atoms*"

P. Lett, National Institute of Standards and Technology, "*Spectroscopy of Na₂ by Ultracold Atomic Photoassociation*"

V. Bagnato, University of Sao Paulo, "*Two-Color Spectroscopy and Wave Packet Dynamics in Ultracold Collisions*"

Dynamics of Ultracold Collisions II

Thursday, 14:30, J. Weiner, presiding:

K. -A. Suominen, University of Oxford, "*Wave Packet Dynamics with Dissipation Studies of Cold Collisions in a Light Field*"

W. Stwalley, University of Connecticut, "*Ultra-Cold Half Collisions*"

R. Kosloff, Hebrew Univ. of Jerusalem, "*Laser Cooling of Internal Degrees of Freedom by a Heat Pump Mechanism*"

R. Gentry, University of Minnesota, "*In Pursuit of the Elusive Helium Dimer*"

New Tests of Quantum Electrodynamics in Hydrogen and Positronium⁴

Thursday, 14:30, E. Eyler, presiding:

G. Adkins, Franklin & Marshall College, "*Positronium: An Introduction to the Physics of Bound States in QED*"

D. Gidley, University of Michigan, "*Measurements of the Lifetime of Para-Positronium*"

C. Zimmerman, University of Munich, "*High-Precision Spectroscopy of Hydrogen*"

S. Chu, Stanford University, "*A New Measurement of the Positronium 1^3S - 2^3S Energy Interval*"

⁴ Sponsored jointly with the Precision Measurements Topical Group.

The deadline for submission of abstracts for contributed papers was January 7, 1994, and post-deadline papers cannot be published in the Bulletin of the American Physical Society. However, space may be available for a few post-deadline papers in the poster sessions.

Abstracts should be sent to: Dr. Thomas Gallagher, 1994 DAMOP, Department of Physics, University of Virginia, Charlottesville, VA 22901. Presentation of post-deadline papers cannot be guaranteed.

Poster sessions will be held on Monday evening and on Thursday afternoon, during which refreshments will be provided. The DAMOP Business Meeting, to be held on Wednesday morning at 11:00, takes on a special significance when we meet jointly with the APS, since it provides the only opportunity for DAMOP to present fellowship certificates. *We encourage you to attend!*

Tom Gallagher and Ron Phaneuf wish to thank the following individuals for their invaluable assistance in sorting the contributed abstracts for the April meeting into appropriate sessions: Aslam Baig, Charles Clark, Paul Dagdigan, Mark Edwards, Mike Gatzke, Dan Larson, Svetlana Mincheva and Greg Story.

ICPEAC 1995

It is time to start thinking about the invited program for the next ICPEAC Conference to be held in Whistler, British Columbia in 1995. To create the invited program, suggestions are made by members of the ICPEAC General Committee to the Executive Committee. The program will be finalized in June, 1994. The geographic and disciplinary distributions of General Committee members are intended to facilitate input from the entire atomic collisions community. The North American members of the ICPEAC General Committee are:

U.S.A.: J.N. Bardsley, K. Bartschat, K. Becker, J. Burgdörfer, C.L. Cocke, S. Datz, G.H. Dunn, D. Jaecks, K. Kirby, S. Manson, A.S. Schlachter.

Canada: C. Brion, J.W. McConkey, J.B.A. Mitchell

Mexico: I. Alvarez

Your suggestions are solicited. If you have ideas for speakers, sessions or topics for plenary talks, please communicate with any of the above. Suggestions should be as specific as possible.

...from Steve Manson

¹ Sponsored jointly with the Division of Physics of Beams.

² Sponsored jointly with the Division of Particles and Fields.

³ Sponsored jointly with the Division of Chemical Physics.

**Election information follows.
Please don't forget to vote!!!**

Election of Divisional Officers

Candidates for Vice-Chair:

The vice-chair takes over as chair of the Fellowship Committee after the 1994 DAMOP Meeting, succeeds to Chair-Elect after the 1995 Meeting (serving as chair of the Program Committee for the 1996 DAMOP Meeting), and then to DAMOP Chair after the 1996 Meeting. The total term of office for this position is therefore three years, beginning in April, 1994.

COCKE, C. LEWIS. B.A., Haverford College 1962; Ph.D., Caltech 1967; NSF Postdoctoral Fellow, 1967-68, Research Associate, 1968-69, University of Strasbourg; Assistant Professor to Professor, Kansas State University, 1969-present; Associate Director for Research Planning, J.R. Macdonald Laboratory, Kansas State University, 1989-present; Visiting scientist, Aarhus University, 1978-79; Alexander von Humboldt Fellow, University of Frankfurt, 1991-92. Fellow, American Physical Society. DAMOP Committees: Publications Committee, 1981-3; Program Committee, 1982-83, 1993-present; Executive Committee (appointed), 1984-85; Fellowship Committee, 1989-91. National Research Council Physics Survey Committee, Panel on Atomic, Molecular and Optical Physics, 1983-4. ICPEAC General Committee, 1993-present. **RESEARCH INTERESTS:** collisions involving multiply charged ions interacting with electrons, atoms, surfaces and clusters. Studies of mechanisms for electron transfer, ionization, and excitation. Photon and electron spectroscopy of multiply charged systems.

DRAKE, GORDON W.F. B.Sc. 1964, McGill University; M.Sc. 1965, University of Western Ontario; Ph.D. 1967, York University. Postdoctoral Fellow, Smithsonian Astrophysical Observatory, 1967-69; Assistant Professor, University of Windsor, 1969-72; Associate Professor, 1972-75; Professor, 1975-86; University Research Professor, 1986-present. Member of the Santa Barbara Institute for Theoretical Physics, 1988. Alfred P. Sloan Fellow, 1973-75; C.A.P. Herzberg Medal, 1979; Steacie Prize, 1981; Killam Fellowship, 1990-92. Fellow of the Institute of Physics, 1983; Fellow of the APS, 1983; Fellow of the Royal Society of Canada, 1986. Member of the Organizing Committee for ICPEAC, 1975-76; ICAP, 1982, 1988, 1990, 1992, 1994; VII Int. Conf. on Beam Foil Spectroscopy, 1984; Symposium on Atomic Spectroscopy and Highly Ionized Atoms, 1987; NATO Advanced Study Institute on the Physics of Highly Ionized Atoms, 1988. Chairman, Local Organizing Committee for the Windsor DAMOP Meeting, 1989, and co-chair for the 1992 Annual Congress of the CAP. Member of the Canadian NSERC Grant Selection Committee, 1981-84; CAMS, 1982-84; DAMOP Executive Committee, 1986 and 1989-92; Rapporteur (1986-87) and Convener (1987-88) for the Physics Division of the Royal Society of Canada.

Chairman of the Rutherford Medal Committee, 1987, 1993, member of the Davisson-Germer Prize Committee, 1991-93, the Polanyi Prize, 1993-96, and the Killam Fellowship Selection Committee, 1992-95. Council Member of the Canadian Association of Physicists, 1987-89; Vice Chairman (1988-89) and Chairman (1989-90) of the Canadian Division of Atomic and Molecular Physics. Chairman of the DAMOP Publications Committee, 1989-93, and Program Committee, 1992-95. Editor, APS Handbook of AMO Physics. Divisional Associate Editor, *Physical Review Letters*, 1985-88 and 1988-94; Editorial Board member for *Physical Review A* 1992-95; Associate Editor, *Canadian Journal of Physics*, 1987-present. **RESEARCH INTERESTS:** High precision theory of two- and three-electron atoms, relativistic and quantum electrodynamic effects, Lamb shift measurements, forbidden and multiphoton transitions; muonic atoms; unitary group methods for complex atoms.

Candidates for Divisional Councillor:

The Divisional Councillor represents DAMOP on the APS Council, which is the governing body of the American Physical Society. The APS Council sets policy and has the ultimate responsibility for the actions of the Society. The term is four years, beginning January 1, 1995.

CHU, STEVEN. B.S. Physics, A.B. Mathematics, University of Rochester, 1970; Ph.D. Physics, University of California, Berkeley, 1976. Post-Doctoral Fellow, Berkeley, 1976-78. Member of Technical Staff, Bell Labs, 1978-83; Department Head, AT&T Bell Labs, 1983-87. Professor of Physics and Applied Physics, Stanford University, 1987-present, Chair of Physics, 1990-93. Morris Loeb Lecturer, Harvard University, 1988; Visitor to JILA, 1989; Visiting Professor, College de France, 1990. Fellow, APS; Fellow, Optical Society of America; Fellow, American Academy of Arts and Sciences; Member of National Academy of Sciences. Broida Prize of the APS, 1987; co-winner of the King Faisal International Prize for Science, 1993. Chair of Laser Science Topical Group of APS, 1989-90, Vice-Chair, 1988-89; Conf. Co-chair of QELS, 1992, Program Co-Chair, 1990; NRC Committee on AMO Physics (CAMOS), 1992-present; NSF Physics Advisory Board, 1990-93; Quantum Electronics representative of IUPAP, 1993-present; Associate editor, *Optics Letters*. **RESEARCH INTERESTS:** Atomic physics, quantum electronics, biophysics, polymer physics, microscopy. Current research: laser cooling and trapping of atoms, atom interferometry, positronium spectroscopy, biology of single molecular events, fundamental studies of polymer solutions and polymer melts.

Candidates for Divisional Councillor (cont'd):

DUNN, GORDON H. B.S. Physics, 1953, Ph.D. Physics 1961, University of Washington. Senior Scientist, National Institute of Standards and Technology (NEST), 1985-present; Fellow of NEST, 1993-; Chairman, Joint Institute for Laboratory Astrophysics (JILA), 1987-1989; Fellow, JILA, 1964-present; Professor Adjoint, Department of Physics, University of Colorado, 1974-present; Chief, Quantum Physics Division, National Bureau of Standards (NBS), 1977-85; Physicist, NBS, 1962-77; Consultant, Science and Technology Committee, U.S. House of Representatives, 1975-76; Lecturer, University of Colorado, 1962-64; NA-NRC Postdoctoral Research Associate, NBS, 1961-62. Gold Medal, U.S. Department of Commerce, 1970; Davison-Germier Prize of the American Physical Society, 1984. Fellow, American Physical Society; Member, Division of Atomic, Molecular and Optical Physics (DAMOP), Division of Chemical Physics (DCP), Forum on Physics and Society and Topical Group on Precision Measurements and Fundamental Constants. Member, Panel on Public Affairs (POPA) of APS, 1993-. In DAMOP: Executive Committee (appointed), 1969; Publications Committee, Program Committee, 1976-78; Executive Committee (elected), 1985-88; Public Education Committee, 1987; Chair-elect, 1988; Chair, 1989-90; Fellowship Committee, 1992-93. Division-Germier prize selection committee, 1982, 1990, Chair 1992. NRC Committee on Atomic and Molecular Science (CAMS) 1983-86; NRC Panel on Instruments and Facilities, 1983-84; NRC/CAMS Panel on Ion Storage Ring for Atomic Physics, 1985-88; Vice Chair, CAMOS, 1989; Chair, CAMOS, 1990-91; Executive Co-Chair, Panel on Future of Atomic, Molecular and Optical Science (FAMOS), 1991-93; Chair (FAMOS), 1993-. General Committee, International Conference on the Physics of Electron and Atomic Collisions (ICPEAC), 1969-73; Program Committee, ICPEAC, 1975; Executive Committee, ICPEAC, 1991-present; Vice-Chair, ICPEAC, 1993-. Conference Committee, Gaseous Electronics Conference (GEC), 1966-70; Secretary, GEC, 1968; Chair, GEC, 1969. Program Committee, APS Topical Conference on Atomic Processes in High Temperature Plasmas (APHTP), 1977-81, 1985, 1993; Co-Secretary APHTP, 1979; Chair APHTP, 1981; Co-organizer, NATO Advanced Study Institute on Physics of Electron-Ion and Ion-Ion Collisions, 1985; Co-organizer, U.S.-Japan Workshop on "Roles of Atomic and Molecular Processes in Plasma Modelling and Diagnostics: Resonance Effects in Electron-Ion Collisions", 1986. Editorial Board, *Journal of Physical and Chemical Reference Data*, 1989-92. **RESEARCH INTERESTS:** 1) Electron-ion collisions: recombination, excitation, dissociation, ionization; 2) Photon-ion collisions; 3) Ion-molecule reactions at ultra-low temperatures in ion traps; 4) Electron-atom and ion-atom collisions; 5) Very-high-accuracy atomic mass measurements using ion traps.

Candidates for Executive Committee:

The Executive Committee is the governing body of our Division and advises the Chair and other officers of DAMOP. Elected members-at-large will serve three-year terms beginning immediately after the 1994 DAMOP Meeting.

FROESE FISCHER, CHARLOTTE. B.A. 1952, M.A. 1954, University of British Columbia; Ph.D. 1957, Cambridge University. Instructor, 1957-9, to Professor, 1965-69, of Mathematics, University of British Columbia; Professor of Applied Analysis and Computer Science, 1968-75, University of Waterloo; Professor of Computer Science, 1974-79, Penn State University; Professor of Computer Science, Mathematics, Chemistry, Physics and Astronomy, 1980-present, Vanderbilt University. Research Fellow, 1963-4, Harvard College Observatory; Visiting Scientist, Argonne National Laboratory and Lawrence Berkeley Laboratory, 1986; ITAMP, Harvard College Observatory, 1992. Sloan Foundation Fellow, 1963-7. APS Fellow, 1990. Editorships: Numerical Analysis Section Editor, *ACM Computing Reviews*, 1968-78; Atomic Structure Editor, *Comput. Phys. Commun.*, 1968-present; Advisory Editorial Board, *Int'l J. Quantum Chem.*, 1986-92. Physics Panel, Board of Assessment of NEST Programs, 1990-1993. NSF Minority Fellowship Evaluation Panel for Mathematics, Physics. and Chemistry, 1991-94. **RESEARCH INTERESTS:** Atomic structure calculations; theoretical predictions of atomic properties; transition probabilities and lifetimes; application of spline methods to bound and continuum states; parallel and distributed computing.

MacADAM, KEITH B. B.A. 1965, Swarthmore College; M.A. 1967 and Ph.D. 1971, Harvard University; Frank Knox Memorial Traveling Fellow, Harvard University 1971-72. Postdoctoral Research, University of Stirling, Scotland, 1971-73; Yale University, 1973-74; Univ. of Arizona, 1974-77. Assistant Professor to Professor, University of Kentucky, 1977-present. Visiting Scientist, Institute of Physics, Aarhus, Denmark 1983. University of Kentucky Research Professor 1990-91. Visiting Fellow, Joint Institute for Laboratory Astrophysics, Boulder, Colorado, 1991-92. Fellow, American Physical Society; Member, Institute of Physics (London). Member, ICPEAC General Committee, 1981-85. Member, DAMOP Publication Committee, 1985-86, 1992-95. Member, DAMOP Program Committee, 1990-93. Editorial Board Member (Atomic Physics), *Physical Review A*, 1991-93. **RESEARCH INTERESTS:** Collisions of charged particles with Rydberg atoms, alignment and orientation in electron-atom and ion-atom collisions, fine structure of highly excited states, nonadiabatic effects in atom-field interactions, collisions of highly charged ions.

(continued on page 9)

Candidates for Executive Committee (cont'd):

OLSON, RONALD E. B.S. 1964, Ph.D. 1967, Purdue University. NSF Postdoctoral Fellow, 1968, University of Wisconsin. Atholl McBean Postdoctoral Fellow, 1969, Chemical Physicist 1970-78, Manager Atomic Collisions Program, 1979-81, Stanford Research Institute. Professor of Physics, 1981-86, Curators' Professor of Physics, 1987-, University of Missouri-Rolla. APS (Fellow); Treasurer, Local Committee, DEAP, Stanford Research Institute, 1972; Senior Fulbright Fellow, France, 1974-75; Visiting Scientist, University of Bielefeld, 1980; Co-Organizer Int. Seminar on Atomic Processes in Fusion Plasmas, Santa-Cruz, 1985; Senior Humboldt Award, Germany, 1988-89; Atomic Data Advisory Panel - IAEA, United Nations, Vienna 1988-91; NORDITA Lectureship, Sweden and Denmark, 1989; Editorial Board of *Journal of Physics B*, 1990-93; Hereaus Foundation Guest Professor, University of Frankfurt, 1990; NRC CAMOS Committee 1991-; Organizing Committees - Conference on the Physics of Multiply Charged Ions, 1989-; APS Topical Conference on Atomic Processes in High Temperature Plasmas 1991-present. **RESEARCH INTERESTS:** Studies of energetic multiply-charged ion, many-electron atom ionization and capture mechanisms. Atomic collision processes in tokamak fusion plasmas.

STWALLEY, WILLIAM C. B.S., Chemistry, California Institute of Technology, 1964; Ph.D., Physical Chemistry, Harvard Univ., 1969. University of Iowa, Assistant Professor to Professor, 1968-93; Associate Program Director for Quantum Chemistry, National Science Foundation, 1975-76; Affiliate Professor of Physics, University of Iowa, 1977-93; Director, Iowa Laser Facility, 1978-93; Director, Center for Laser Science and Engineering, University of Iowa, 1987-89; George Glockler Professor of the Physical Sciences, 1988-93; Head, Department of Physics, University of Connecticut, 1993-present; Affiliate Professor of Chemistry, University of Connecticut, 1993-present; Director, University of Connecticut Laser Facility, 1993-present. Fellow, American Physical Society; Fellow, Optical Society of America; Member, American Chemical Society. Chairman, Gordon Conference on Atomic and Molecular Interactions, 1980; Co-Chairman, Gordon Conference on Nonlinear Optics and Lasers, 1979-80, 1985-86, 1986-87; Member, Committee on Atomic and Molecular Science (CAMOS), National Academy of Sciences/National Research Council (NAS/NRC), 1979-82; Executive Committee Member and Alternate Councilor, Division of Physical Chemistry, American Chemical Society, 1981-83; Member, DAMOP Program Committee, 1981-83; Member, Army Research Office Chemistry Advisory Committee, National Academy of Sciences/National Research Council, 1981-84; Member, APS E. K. Plyler Prize Committee, 1982; Fellow, Japan Society for Promotion of Science, 1982; Member, Editorial Advisory Board, *Journal of Molecular Spectroscopy*, 1982-87; Chair, American Chemical Society Division of Physical Chemistry,

Graduate Student Fellowship Program Committee, 1982-83; Member, APS Division of Chemical Physics, Fellowship Nomination Committee, 1982-83; Member, Air Force Office of Scientific Research Chemistry Evaluation Panel, 1983-86; Secretary-Treasurer, APS Division of Chemical Physics, 1984-90; Member, DAMOP Fellowship Nomination Committee, 1984-85; Co-Founder/Program Chair/Chair/etc., International Laser Science Conference, 1984-91; Member, Steering Committee of the APS Topical Group on Laser Science, 1985-89, 1987-92; Editor (USA), *Laser Chemistry*, 1985-90; Chairman, Air Force Evaluation Panel on High Energy Density Materials, National Academy of Sciences/National Research Council, 1985-92; Visiting Lecturer, Chinese Academy of Sciences 1986; Editorial Advisory Board, *Chemical Physics Letters*, 1986-95; Member, W. F. Meggers Award Committee, Optical Society of America, 1987-88; Member, Joint Council on Quantum Electronics, 1988-90, 1993-96; Member, Committee on Line Spectra of the Elements - Atomic Spectroscopy, National Academy of Sciences/National Research Council, 1988-91; Member, DAMOP Program Committee, 1990-92; Vice Chair/Chair/Ex-Chair, APS Topical Group on Laser Science, 1989-92; Member, Fellows and Honorary Members Committee, Optical Society of America, 1990-92; Member and current Vice Chair, CAMOS, 1990-91, 1992-95; Member, Program Committee, Quantum Electronics and Laser Science Conference, 1991-92; Member, Fellowship Nomination Committee, APS Topical Group on Laser Science, 1991-present; Member, Organizing Committee, NRC Workshop on Data Base Needs for Plasma Processing of Materials, 1993-present. **RESEARCH INTERESTS:** Atomic, molecular and optical physics; chemical physics; especially atom, molecule and photon interactions, particularly few atom systems where the interactions can be obtained from diverse fields: spectroscopy, collisions, electronic structure calculations.

We thank the Nominating Committee for presenting an outstanding slate of candidates for office. The Committee members are: Anthony Starace (chair), Norman Bardsley, Daniel Grischkowsky, Patrick Richard and Daniel Larson.

Bottcher Symposium

A memorial atomic collisions symposium in honor of Chris Bottcher will be held in Oak Ridge on March 3-5, 1994. For information, contact:

Dr. David Schultz

Oak Ridge National Laboratory

P.O. Box 2008, Bldg. 6003

Oak Ridge, TN 37831-6373

E-mail: schultz@orph28.phy.ornl.gov

FAX: 615-574-4745

A ballot follows. Please vote!

BALLOT

Vice Chair

(vote for one)

- ☐ C. Lewis Cocke
- ☐ Gordon W.F. Drake

Divisional Councillor

(vote for one)

- ☐ Steven Chu
- ☐ Gordon Dunn

DAMOP Executive Committee

(vote for two)

- ☐ Charlotte Froese Fischer
- ☐ Keith B. MacAdam
- ☐ Ronald E. Olson
- ☐ William C. Stwalley

*Please vote and return this ballot **before April 1, 1994** to:*

Ron Phaneuf
Secretary-Treasurer, DAMOP
Department of Physics / 220
University of Nevada, Reno
Reno, NV 89557-0058