

1980 III

The American Physical Society

Division of Electron and Atomic Physics

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October 1980

TO MEMBERS OF THE DEAP from Tom Miller

ELECTIONS

A ballot is enclosed for the election of one person to serve a three-year term on the Executive Committee. The postcard ballot must be returned to me by 21 November 1980. The 1981 Executive Committee will consist of:

Bernd Crasemann, chairperson
Alexander Dalgarno, vice-chairperson
Patricia Dehmer, secretary-treasurer
Eugene Rudd, most recent past chairperson
Ivan Sellin, division councillor (until 1-83)
Hugh Kelly, elected member (until 12-81)
Win Smith, elected member (until 12-82)

In addition, there will be one newly elected member, and the chairperson may appoint two other persons to serve on the Committee.

WORKSHOP ON LASERS IN ATOMIC AND MOLECULAR PHYSICS

Robert Compton of Oak Ridge National Laboratory has organized a laser workshop for the final evening of the DEAP meeting at Los Angeles. Jean-Claude Diels of the University of Southern California is co-chairman of the workshop. Interested persons will have to make sure that their travel arrangements allow them to stay in Los Angeles late on Wednesday evening. The workshop will treat two topics of current interest:

1. Production and Uses of VUV-Radiation from Third Harmonic Generation (THG) in Gases. The speakers who will discuss THG are: Charles Rhodes, Richard Freeman, Jean-Claude Diels, Rita Mahon, John Reintjes, John Miller, and Marvin Payne. Drs. Miller and Payne will present a joint discussion of theory and experiment involving a new collective effect in THG.

2. Multiphoton Ionization of Atoms - Theory and Experiment. G. Mainfray and Peter Lambropoulos will speak on this topic.

Drs. Compton and Diels intend for the presentations to be informal and hope to encourage participation by other persons, with the aim of maximum exchange of information and ideas. The workshop will begin at 4:00 pm and may last until 9 pm. A buffet dinner will be provided courtesy of members of the laser industry, during the workshop. The enclosed postcard ballot contains a line for indicating if you believe that you will be present for the dinner on Wednesday evening, 3 December 1980, so that the organizers can finish their preparations. For this reason, it would help if those interested would return the postcard promptly.

DEAP members are hereby reminded of the Topical Meeting on Infrared Lasers which will be held at USC the same week as the DEAP meeting, as described in the previous newsletter. Details on the meeting (3-5 December 1980) may be obtained from Martin A. Gunderson, Department of Electrical Engineering, Seaver Service Center, University of Southern California, University Park, Los Angeles, CA 90007.

12TH ANNUAL DEAP MEETING

In celebration of USC's 100th birthday:

The Twelfth Annual Meeting of the Division of Electron and Atomic Physics will be held in Los Angeles, California, on 1-3 December 1980. The scientific program will consist of contributed and invited papers, symposia, and a laser workshop. The Department of Physics of the University of Southern California will act as host, with the local arrangements committee consisting of Profs. Tu-nan Chang, William Cooke, Peter Lambropoulos, and Gerhard L. Weissler.

The scientific sessions will be held at the Davidson Conference Center on the campus of USC, corner of Figueroa Street and Jefferson Blvd., with free parking for conference attendees on the lot immediately west of the Conference Center. All DEAP members and their families who plan to attend should fill out the form attached and return it to G. L. Weissler, DEAP, Department of Physics, University of Southern California, Los Angeles, CA 90007. The local committee will attempt to register you in the hotel of your choice. Please send no money for hotel accommodations. We have the following blocks of rooms set aside for our DEAP meeting at four hotels: 150 rooms at the University Hilton across the street from the Davidson Conference Center; 50 rooms at the Los Angeles Hilton 30 blocks north of the Davidson Conference Center; 75 rooms at the Mayflower Hotel 3 blocks east of the Los Angeles Hilton; and 50 rooms at the Vagabond Motor Hotel 1/2 block north of the Davidson Conference Center.

The most probable prices are indicated on the attached form. While the local committee makes the reservations, the individual hotel will confirm them to the DEAP member directly. Those arriving at the Los Angeles International Airport should take the RTD Airport Express bus to the Los Angeles Hilton (approximately \$4.50 one way). A Hilton bus will provide transportation from the Los Angeles Hilton (downtown) to the University Hilton (about 4 miles south) every 30 minutes (no charge). Taxi services from the International Airport to downtown Los Angeles and USC will cost approximately \$20.00.

Preregistration will greatly facilitate the planning and functioning of the meeting. The registration fee will be \$20 up to 15 November, and \$25 thereafter. The fee for unsupported students and unemployed members is \$3. Please use the preregistration form attached, and indicate whether you will attend the banquet. In addition, please indicate your choice of the hotel on this form but send no hotel money. Checks for registration and the banquet should be made payable to "DEAP, Los Angeles."

Registration will take place in the lobby of the Davidson Conference Center on the USC campus from 5 to 9 pm on Sunday, 30 November, and throughout the conference. On Sunday evening from 7-9 there will be an informal reception with wine and cheese at the Conference Center.

On Monday evening there will be a special memorial session for James E. Macdonald, formerly of Kansas State University. Colleagues and collaborators of the late Professor Macdonald will present a group of scientific papers in his memory.

The Annual Business Meeting will be held in Room I of the Conference Center at 11 am on Tuesday. The meeting will be conducted by Eugene Rudd as retiring chairperson. The officers for 1981 will be Bernd Crasemann (chairperson), Alexander Dalgarno (vice-chairperson), and Patricia M. Dehmer (secretary-treasurer). During the Business Meeting Laird Schearer will speak on his experiences with the NSF last year, and Ivan Sellin will report to the DEAP on the activities of the NRC Committee on Atomic and Molecular Science.

Beginning at 4 pm on Tuesday afternoon, 2 December, there will be time available to visit various USC laboratories. In addition, V. McKoy at Caltech (tel. 213-795-6811, x2545), S. Trajmar at JPL (tel. 213-354-2145), and R. T. Poe at UC Riverside (tel. 714-787-5331) have agreed to make arrangements for DEAP members to visit their respective institutes. If the local USC committee is informed, we will make arrangements for DEAP members to visit other research laboratories at UCLA, Aerospace Corp., TRW, and Hughes Research Laboratories.

On Tuesday evening, 2 December, there will be a reception and cash bar at 6 pm preceding the traditional banquet, which will be held at USC's Town and Gown at 7 pm that evening.

On Wednesday afternoon from 1 pm until 4 pm authors of poster papers will be available near their posters to discuss their work. The posters will be displayed in Rooms IV and V, with possibly some overflow, and may be put up as early as Monday morning so that people can look at them throughout the meeting.

At 4 pm Wednesday afternoon, and continuing through the evening until about 9 pm, there will be the laser workshop described on page 1 of this newsletter.

The program committee has consisted of George Basbas, Donal Burns, Tu-nan Chang, Robert Compton, Bernd Crasemann (chairperson), Patricia Dehmer, Gordon Dunn, David Golden, Edward Hinds, Walter Johnson, Quentin Kessel, Daniel Larson, Steven Manson, Eugen Merzbacher, Walter Meyerhof, John Moseley, Richard Pratt, Patrick Richard, Eugene Rudd, Roberta Saxon, and Howard Shugart. The sessions were arranged by Mau Hisung Chen, Bernd Crasemann, David Herrick, Tom Miller, and John Moseley.

Contributed papers will be given in parallel sessions. An overhead projector will be provided, but a 35-mm projector will not be provided except upon advance notification of the local committee.

The symposia for the meeting will consist of the following, with speakers indicated:

ASTROPHYSICS - ITS LINK WITH ATOMIC AND MOLECULAR PHYSICS, Roberta P. Saxon presiding.

William Watson: "Atomic and Molecular Processes in Astrophysics"

Kate Kirby: "Theoretical Studies of Photodissociation Mechanisms in Astrophysical Environments"

Wesley T. Huntress, Jr.: "Laboratory Studies of Chemical Processes in the Interstellar Medium"

Gillian R. Knapp: "Radio Frequency Observations of Interstellar Molecules"

VUV RADIATION PHYSICS, Tu-nan Chang presiding.

U. Fano: "The Role of VUV Studies of Atoms, Molecules and Condensed Matter"

F. J. Wuilleumier: "Recent Research in Atoms with Synchrotron Radiation in the VUV Region"

D. L. Judge: "VUV Radiation Physics in Molecular Systems"

L. C. Davis: "Atomic Effects in the VUV Spectroscopy of 3d Metals"

S. E. Harris: "Anti-Stokes Scattering as a Radiation Source for XUV Spectroscopy"

SPECIAL SESSION IN MEMORY OF JAMES R. MACDONALD, Bent Fastrup presiding.

P. Richard: "Electron Capture from K Shells of Multi-Electron Targets"

P. H. Mokler: "Inner-Shell Excitation in Very Heavy Ion-Atom Collisions"

E. Merzbacher: "Inner-Shell Vacancy Production by Excitation and Ionization in Energetic Ion-Atom Collisions"

LOOSELY BOUND OR VAN DER WAALS MOLECULES, Patricia M. Dehmer presiding.

D. H. Levy: "Mild Excimers and Exciplexes: Dimers and Complexes of s-Tetrazines"

Willard R. Wadt: "Ab Initio Calculations on Excited States of Loosely Bound Molecules"

J. S. Winn: "A Systematic View of Weakly Bound Diatomics"

Cornelius E. Klotz: "Electron Attachment to van der Waals Molecules"

CORRELATION, ORIENTATION, AND ALIGNMENT IN ATOMIC COLLISIONS, Patrick Richard presiding.

Joseph Macek: "Orientation, Alignment and Coherence in Atomic Collisions"

D. E. Golden: "The Use of Electron-Photon Angular Correlations to Study Atomic Excitation by Electron Impact"

D. H. Jaecks: "Alignment and Orientation Measurements in Ion-Atom and Ion-Molecule Collisions"

N. H. Tolk: "Elliptic Polarization of Ly- α and Balmer Radiation from Grazing Incidence Collisions of Protons on Surfaces"

R. D. DuBois: "Angular Distributions of Auger Electrons and Polarization of X-Rays Produced by Electron and Light Ion Impact"

RELATIVISTIC EFFECTS IN HEAVY-ION COLLISIONS, Robert Anholt presiding.

G. Soff: "Relativistic Effects in Quasimolecular Collisions of Very Heavy Ions"

D. Liesen: "Excitation of Strongly Bound Electrons in Superheavy Collision Systems"

W. Woelfli: "X-Ray Transitions in Superheavy Quasi-Molecules"

P. Vincent: "Positrons from Superheavy Quasimolecules"

CAMS MEETING IN LOS ANGELES

The Committee on Atomic and Molecular Science of the NRC will meet on Sunday evening, 30 November, in room 223A of the Davidson Conference Center of USC, from 3:00 pm until 5:30 pm.

DEAP SYMPOSIA AT APS MEETINGS

APS Annual Meeting, 26-29 January 1981, New York

1. HISTORY OF SPECTROSCOPY, Eugene Rudd presiding (co-sponsored by the AAPT).

Owen Gingrich: "Kirchoff and Bunsen: Unlocking the Chemical Secrets of the Cosmos"

Emilio Segrè: "Forty Years of Atomic Spectroscopy: From Lorentz Oscillators to Quantum Mechanics"

Jesse Greenstein: "Interactions between Astronomy and Spectroscopy"

Robert S. Mulliken: "Spectroscopy and Molecular Structure"

2. TOPICS IN ATOMIC PHYSICS, Laird Schearer presiding (co-sponsored by the AAPT).

Duane H. Jaeks: "X-Ray Circular Polarization"

David J. Wineland: "Laser Cooling of Trapped Ions"

Patrick O. Egan: "Muonic Helium"

B. Müller: "Superheavy Quasimolecules"

3. ATOMIC PROCESSES AT HIGH TEMPERATURE AND DENSITY, Richard H. Pratt presiding.

V. F. Huebner: "High-Density High-Temperature Opacity"

Balazs Rozsnyai: "Extension of the Hartree-Slater Model for High Temperatures and Densities"

Hans R. Griem: "Dense Plasma Effects on Spectral Lineshapes"

Barukh Yaakobi: "Spectroscopic Signatures of Atomic Processes in Laser-Compressed Plasmas"

APS March Meeting, 16-20 March 1981, Phoenix

1. CHANNELING, Donald S. Gemmell presiding.

C. D. Moak: "Resonant Coherent Excitation of 1- and 2-Electron Ions in Crystal Channels"

N. Cue: "Channeling Radiation from MeV Electrons"

R. H. Pantell: "Radiation from Medium-Energy Charged Leptons Transversing Crystals"

W. M. Gibson: "Applications of Channeling to High-Energy Physics"

2. RYDBERG STATES, W. H. Wing presiding.

3. ELECTRON IMPACT SPECTROSCOPY, Sandor Trajmar presiding (co-sponsored with the Division of Chemical Physics).

APS Spring Meeting, 20-23 April 1981, Baltimore

1. PRECISION MEASUREMENTS IN ATOMIC PHYSICS, Ed Hinds presiding.

2. CURRENT STATE OF METROLOGY AND STANDARDS, Howard Shugart presiding.

3. ATOMIC COLLISIONS WITH STICKY NUCLEI, K. A. Snover presiding.

4. THE SEVERAL-BODY PROBLEM, W. P. Reinhardt presiding.

THIRD TOPICAL CONFERENCE ON ATOMIC PROCESSES IN HIGH TEMPERATURE PLASMAS

The Third Topical Conference on Atomic Processes in High Temperature Plasmas will be held at Louisiana State University in Baton Rouge 25-27 February 1981. This conference is being hosted by the Department of Physics and Astronomy and will be held on the campus of LSU. It is sponsored as a topical conference by the DEAP. The organizing committee is

composed of Gordon H. Dunn, Chairman, Joint Institute for Laboratory Astrophysics; J. Calloway, Co-Secretary, LSU; Ronald J. W. Henry, Co-Secretary, LSU; Clarence F. Barnett, Oak Ridge National Laboratory; Charlotte Froese-Fischer, Vanderbilt; Dennis L. Matthews, Lawrence Livermore Laboratory; Douglas E. Post, Princeton Plasma Physics Laboratory; and Philip M. Stone, Department of Energy.

The purpose of the conference is to bring together atomic and plasma theoreticians and experimentalists and astrophysicists to review and discuss atomic processes occurring in high temperature plasmas such as concern solar physics, astrophysics, the interstellar medium, and the controlled thermonuclear research program. Some of the topics to be emphasized are atomic structure of highly ionized atoms; transition probabilities and lifetimes; electron, photon, and heavy ion collisions; particle and radiative transport; and plasma modeling. We encourage participation of the "user" as well as the "producer" communities.

The program will consist of both invited and contributed papers. It is the intention of the organizing committee to accept all but irrelevant papers, and to avoid parallel sessions. Contributed papers may be presented in poster-session format. Abstracts of all papers actually presented at the meeting will be published in the Bulletin following the meeting. The deadline for abstracts is 9 January 1981.

Those desiring registration materials and additional information should contact the Local Chairmen, Ronald J. W. Henry and J. Callaway, Department of Physics and Astronomy, LSU, Baton Rouge, Louisiana 70803.

GUIDELINES FOR OVERHEAD TRANSPARENCIES

The Program Committee has asked me to distribute these guidelines, attributed to Walter Meyerhof.

1. Overhead transparencies should be designed in such a way as to be readable by any person in the audience. Typically, large projection screens are 6 ft. x 6 ft. (180 cm x 180 cm) and conference rooms are ~30 ft. (900 cm) long. To be clearly readable in the back of the room, a projected letter or number should be 4 in. (10 cm) high.

Typical overhead projectors have an area of 10 in. x 10 in. (25 cm x 25 cm). If this area fills the 6 ft. x 6 ft. screen, a simple calculation shows that a letter or number written on the transparency should be 1/2 in. (1 cm) high to be clearly readable in the setting of a typical hotel conference room. This criterion also implies that an overhead transparency should not have more than 10 written lines or equations.

2. Transparencies which are xeroxed from typed or printed material do not meet the criteria in paragraph 1 and are not acceptable for a conference setting.

3. If it is necessary to show a table on a transparency in order to indicate the scope of the work done, one or two important lines or numbers should be written out in large size on the top or bottom of the table, so that they meet criterion 1.

4. Various kinds of water-soluble and -insoluble ink pens are available for transparencies. Pens marked "superfine" produce lines and letters which cannot be seen clearly at 30 ft. The best pens are "medium".

5. Colors can be used to advantage on a transparency. Only strong colors should be used, though, such as purple, blue, green, and red. Brown and yellow do not show up as well. Important symbols in an equation written in color are helpful in a rapid presentation.

6. Overlays can also be used to advantage, to show comparisons between theory and experiment, additions or modifications of theories or equipment, etc. The overlay should be in a color different from the original.

7. If the transparency is laid out within a 10 in. x 10 in. space, a lot of moving around of the transparency can be avoided.

8. To point out special items on a transparency, use a pointer and point at the screen, standing to the side of the screen. In most conference settings the view of the screen is blocked for some of the audience, if you stand next to the overhead projector and point at the transparency.

9. In general, one should count on 2 to 3 minutes to explain one transparency. Hence, for a 10 minute paper, not more than 5 transparencies should be shown.

VITAE OF NOMINEES

WONG, SHEK-FU, 36, BS 1965, Chung Chi College, PhD 1972, University of Delaware. Research Staff Scientist, 1972-75, Assistant Professor, 1975-78, Associate Professor, 1978-present, Yale University. Satellite Meeting Committee ICPEAC, 1977. Committee for George J. Schulz Symposium, 1977, 1979. Photodetachment; electron collisions with atoms and molecules: vibrational, rotational, and electron excitation, dissociative attachment, excited molecules; crossed-beam studies with monoenergetic ions.

SHAKESHAFT, ROBIN, 33, BSc 1968, University of London (UK), PhD 1972, University of Nebraska. Research Associate, 1972-75, New York University. Assistant Professor, 1975-80, Texas A&M University. Visiting Assistant Professor, 1978, New York University. Visiting Associate Professor, 1980, New York University. Associate Professor, 1980, Texas A&M University. Served on DEAP Program Committee, 1979-80. Theoretical atomic physics, especially (i) atomic collisions at intermediate and high energies, (ii) laser applications to atomic physics, and (iii) quantum electrodynamics.

GALLAGHER, THOMAS F., 35, BA 1966, Williams College, MA 1968, PhD 1971, Harvard University. Research Associate, 1971, Harvard University. Research Associate and Associate Instructor, 1971-72, University of Utah. Postdoctoral physicist, 1972-74, and physicist, 1974-present, SRI International (Stanford Research Institute). Visiting Scientist, 1977, Center d' Etudes Nucleaire de Saclay. Visiting Scientist, 1980, Institut d' Electronique Fondamental. Molecular beams, radio frequency spectroscopy, excited atom collisions, autoionization.

1ST EUROPEAN CONFERENCE ON ATOMIC PHYSICS (ECAP)

The First European Conference on Atomic Physics of the European Physical Society will be held in Heidelberg, West-Germany, on the campus of the University of Heidelberg, from April 6 to April 10, 1981. The conference will cover the fields of the following sections of the European Physical Society: Atomic Spectroscopy (EGAS), Molecular Physics, Electronic and Atomic Collisions, and Chemical Physics.

It is the aim of this conference to bring the various fields of atomic physics together in a scientific meeting, to underline the common aspects of the different fields and to promote the cooperation of the different laboratories in the European countries.

Members of the Organizing Committee of the First European Conference on Atomic Physics are the following scientists:

V. V. Afrosimov, Leningrad	I. Kovacs, Budapest	E. E. Nikitin, Moscow
T. Andersen, Aarhus	J. C. Lehmann, Paris	E. W. Otten, Mainz
B. Cagnac, Paris	V. S. Letokhov, Moscow	G. zu Putlitz, Heidelberg
F. J. Comes, Frankfurt	F. Linder, Kaiserslautern	F. H. Read, Manchester
J. Depireux	E. A. Luchen, Genève	D. N. Stacey, Oxford
J. Durup, Orsay	I. Martinson, Lund	M. J. van der Wiel, Amsterdam
F. A. Gianturco, Bari	R. M. McDowell, Egham	F. Wuilleumier, Palaiseau
J. Heldt, Gdansk	W. Melhorn, Freiburg	L. Zulicke, Berlin

The tentative program structure calls for five morning sessions and four afternoon sessions. In each morning session two plenary lectures will be given followed by two parallel sessions with two progress reports each. The afternoon sessions will be devoted to contributed papers. There will be sessions for oral presentation and others for poster presentation. The two kinds of sessions will not overlap in time. The deadline for contributed papers will be February 1, 1981. All papers submitted will have an abstract in the book of a maximum of two pages.

Attached to this first circular you will find a form which you are kindly asked to send back to the conference address. This form will inform the Organizing Committee about your possible interest in receiving future circulars and in contributing a paper eventually. The second circular will be ready in October 1980. We also should like to ask you to inform interested colleagues about the conference.

Conference Chairman: Prof. G. zu Putlitz, Heidelberg

Conference Address: European Conference on Atomic Physics (ECAP)
-Prof. G. zu Putlitz-
Physikalisches Institut der Universität Heidelberg
Philosophenweg 12
D-6900 Heidelberg
West Germany

Telephone number: 06221/569211, 569212

Telex: 461 597 phyhe d.

Information for participants from Great Britain:

An inclusive tour coach fare will be offered from any point of Great Britain by the Institute of Physics, Atomic and Molecular Physics Sub-Committee, to participants from the United Kingdom. The cost is unlikely to exceed 130 pounds sterling. If interested please return this slip with your name and address to Prof. Frank Read, c/o FOM Institute for Atomic and Molecular Physics, Kruislaan 407, 1098 SJ Amsterdam-Watergraafsmeer, Netherlands.