News

**Highlights from PC’97: Computation at the Interface**

Challenges in Polymer Research for Microelectronics Technologies. There will be also physics in medicine, fullerenes, quantum dots, advances in microscopy, the physics and applications of magneto-rheology, and quantum computations. See The APS Meeting News insert for course and tutorial descriptions, as well as information on how to register.

**Physics to be Honored at November Meetings**

Four physicists will be honored for their work on fluid dynamics and plasma physics at November APS midyear meetings.

**PoC Selected as Ramirez-Trujillo Fellow**

Dr. Carmen Ramirez-Trujillo of the Los Alamos National Laboratory was selected as the 1997 recipient of the DAMOP Ramirez-Trujillo Fellowship.

**Two Young Physicists Receive DAMOP Thesis Award**

Gary Pletcher and Paul Ketter were selected as the 1997 recipients of the DAMOP Thesis Award.

**Directory of Physics Astronomy & Geophysics Staff**

The 1997 AIP Directory of Physics, Astronomy and Geophysics Staff (DPAGS) was distributed to all APS members in September. DPAGS is a useful compilation of over 2000 institutions and organizations employing physicists. DPAGS is a supplement, NOT a replacement, to the APS Membership Directory, which should be retained until reissued in spring 1998. DPAGS' organization-based directory of contact information should contact AIP at: dpags@aip.org. A regularly updated online version of DPAGS will be accessible through the APS Homepage [www.aps.org].

**APS Publication Oversight Committee Participants**

The POC met on September 25 and considered such issues as prices for member subscriptions and plans for a new electronic newsletter.
Highlights from PC'97 Meeting

Computation at the Physics Interface

The annual International Conference on Computational Physics (PC'97) was held 25-28 August 1997 in Santa Cruz, California, highlighting basic and applied computing and modeling issues worldwide to the university, industrial and laboratory communities. The confer- ence was the first to be jointly sponsored by the APS Division of Computational Physics (DCOMP), and the APS Forum on Industrial and Applied Physics (FIAP). The International Union of Pure and App- lied Physics (IUPAP) and the American Physical Society were also co-sponsors. The scientific program consisted of seven half- day sessions of invited, review and contributed papers, and also featured several tutorials on applications and methods of computational physics, as well as a Wednesday evening banquet featuring Paul Horn, vice president of research at IBM, as the keynote speaker.

Plenary speakers were selected from the broad based constituency of computational physics: academia, industry and government laboratories, according to IUPAP Secretary General (Santa Cruz, Davis), then chair of DCOMP. “The plenary talks illustrated the robust interaction between the various scientific constituencies,” he said. “The increasingly severe research prob- lems of interest, and the increasing opportunities for cooperative work between the different constituencies,” he said. “The final speaker, especially, there is a blurring of the ‘basic’ and ‘applied’ physics interface. This will be true of the future, in any mind it is very healthy for physics.” Klein added that feedback from the meeting was “very positive,” and there are plans to have a workshop on computational physics meeting, probably two years from now.

On Monday morning, John P. McTague of Ford Motor Company addressed the use of high-performance computing in the automotive industry, including such applications as computer- aided vehicle design, crash simulation, modal analysis, computational fluid dynamics, and air quality modeling. In the future, “Ulti- mately, CAD models and manufacturing prototypes will rely completely on simu- lation,” said McTague, adding that economic globalization will demand simulation of products and processes spec- ifically tailored for local markets, and distributed computer systems will link a distributed automotive work force.

In the same session, Francesco Leon of Intel spoke of the electronic industry’s need for a significant im- provement in the ability to model and simulate its processes and device simulation capa- bility, driven by both technological and economic forces. Specifically, as tran- sistor sizes approach limits imposed by material properties, and process control becomes impacted by atomic level variation, the industry is turning to more fundamentally accurate modeling/algorithms. “In the design-to- manufacture paradigm, especially, there is a blurring of the ‘basic’ and ‘applied’ physics interface. This will be true of the future, in any mind it is very healthy for physics.” Klein added that feedback from the meeting was “very positive,” and there are plans to have a workshop on computational physics meeting, probably two years from now.

Ray Selected as Ramavataram Fellow

D r. Ranjan Ray, a reader (associate professor) in the Department of Physics at St. Xavier’s College, Calcutta, arrived in the US in July to spend a year as the fifth APS Ramavataram Fellow. The Ramavataram Fund was established in 1983 through donations from the family and friends of Dr. Kilambi Ramavataram, an outstanding physicist, teacher and researcher in nuclear and molecular physics who died in 1977. Its aim is to improve undergraduate physics teaching in India by allowing outstanding Indian physics teachers to visit institutions in North America, to observe and study teaching methods. Recipients are named by a Ramavataram fellowship selection committee in India.

Ray is spending the first nine months of his visit in Michigan State University’s Department of Physics, and will spend the final three months at the Lawrence Ber- keley National Laboratory. At MSU, he is taking part in developing and imple- menting an introductory-level general physics course called "Multimedia Phys- ics." Instead of attending lectures, students will learn the material from a Website, using their respective computers. Each can then follow the course according to their own temperament and personal style.

“Apart from text, the material we present online includes simulations and animations, both interactive,” said Ray. “We feel that it also offers a variety of video and audio experiments and phenomena, including sound. Other interesting features include individualized home-work prob- lems, with the software giving “hints” tailored to mistakes made by the student.

At Berkeley, the human and the tools of the work will be similar. We expect the challenge will be at the ‘content’ level.” Ray was selected for the fellowship from postgraduate/ research level physics of par- ticle beams in accelerators that may interest upperclass physics majors and be gaining graduate students. Ray will also prepare a multimedia presentation to at- tract more to this field. This is a project funded by the APS Division of Physics of Beams. Ray expressed appreciation for the exposure to a wide variety of physics educational software during his fellow- ship tenure, which he hopes to make available to students back in India. "They take learning to a higher order of magni- tude," he said, adding that physics teachers in India are becoming aware of this mode of instruction.

Ray received his PhD in solid state theo- retical physics from the University of Oregon in 1978, with a thesis on observe- able properties of crystalline electrons in magnetic fields. In addition to his position with the physics department at St. Xaverie’s College, he is a part-time lec- turer at the college’s Computer Centre which he helped establish in 1985. He has also served as a member of the edito- rial committee of The Physics Teacher, published by the American Association of Physics Teachers.
A vibration is a motion that cannot make up its mind which way it wants to go.

Water freezes at 32 degrees and boils at 212 degrees. There are 180 degrees between freezing and boiling because there are 180 degrees between north and south.

Some oxygen molecules help fires burn while others help make water, so some- times it’s brother against brother.

Dew is formed on leaves when the sun shines down on them and makes them zero gravity.

The pistol of a flower is its only protection against insects.

The following are all quotes collected from the science exams of elementary school students:

We say the cause of perfume disappearing is evaporation. Evaporation gets blamed between freezing and boiling because there are 180 degrees between north and south.

The pistol of a flower is its only protection against insects.

The pistol of a flower is its only protection against insects.

Our future scientists

The following are all quotes collected from the science exams of elementary school students:

1. Water is composed of two gins, Oxygin and Hydrogin. Oxygin is pure gin.
2. Hydrogin is gin and water.
3. Some oxygen molecules help fires burn while others help make water, so sometimes it’s brother against brother.
4. Nitrogen is not found in Ireland because it is not found in a free state.
5. When you breathe, you inspire. When you do not breathe, you expire.
6. Dew is formed on leaves when the sun shines down on them and makes them perspire.

Nature reserves the right to protect insects.

The tides are a fight between the Earth and moon. All water tends towards the moon, because there is no water in the moon, and nature abhors a vacuum. I forget where the sun joins in this fight.

Vacuums are nothing. We only mention them to let them know we know they’re there.

Vacuum: A large, empty space where the pope lives.

Magnet: Something you find crawling all over a dead cat.

Water freezes at 32 degrees and boils at 212 degrees. There are 180 degrees between freezing and boiling because there are 180 degrees between north and south.

A vibration is a motion that cannot make up its mind which way it wants to go.

Many dead animals in the past changed to fossils while others preferred to be oil.

We say the cause of perfume disappearing is evaporation. Evaporation gets blamed for a lot of things people forget to put the top on.

To most people solutions mean finding the answers. But to chemists solutions are things that are still all mixed up.

I am not sure how clouds get formed. But the clouds know how to do it, and that is the important thing.
OPINION

APS VIEWS

FAQs About Electronic Abstracts
by Daniela Boonchaisri, APS Meetings Department & Adrienne Maskey Vincent, Electronic Publication Specialist

Abstract season is upon us again in the Meetings Department of the APS. We have outlined the deadlines for spring meetings looming, we are reading ourselves for the nearly 9,000 abstracts we will receive electronically over the next couple of months. During this time, we will spoil, format, sort, acknowledge, organize, read, file, print, copy, and mutilate (just kidding) all of physics research from around the world.

So that you can help us, as well as to ensure that you have a trouble-free electronic submission experience, we offer answers to some of the more frequently asked questions about the process:

How do I find my meeting ID?
The Calendar of Meetings, found on the meeting page of the APS website and the back cover of the APS meeting programs lists meeting IDs next to the meeting name. Meeting ID codes may also be obtained by sending an e-mail message to abs-info@aps.org.

What is LaTeX and do I need to know it to be able to submit an abstract?
No. You do not need to know LaTeX to submit an abstract. You may need to know a few LaTeX commands if your abstract includes subscripts, superscripts, Greek letters or mathematical symbols. A list of common LaTeX commands can be found at http://www.aps.org/meet/instruct.html under the LaTeX Help heading.

How will I know if my abstract is formatted correctly?
You can test your abstract by using the online abstract tester at http://flux.aps.org. The tester will allow you to view your abstract in its final format. You can also make sure that any LaTeX commands you may have used have formatted properly. Soon, the APS will be offering a web-based submission form so that abstracts can be submitted directly from the web. Watch for future announcements!

What is the length limit for abstracts?
Contributed abstracts are limited to 1,300 characters; invited abstracts are limited to 2,000 characters. This limit includes the title, author listings, footnotes, titles and the abstract body.

How do I submit my completed template?
After completing your template, cut and paste, or write the completed template into a new e-mail message, and send it to abs-submit@aps.org.

How will I know if my abstract has been received?
Within 24 hours of submitting an abstract, you will be notified that we have received an email from you. Within 72 hours, you will be sent a log number assignment. Please remember that these automatic notices are sent to the e-mail address from which the abstract was sent.

What if I discover an error in my abstract after I have submitted it, but before the deadline?
You may resubmit a corrected version of your abstract up to the meeting deadline. You should put a note in the Special Instructions field of your corrected template stating what you are replacing. If no Special Instructions are included, we will use the higher-numbered abstract and ignore all previous submissions with the same title and authors.

What if I have further questions?
The following URL is full of helpful advice—http://www.aps.org/meet/instruct.html. You can also send us an e-mail at abs-help@aps.org or call 301-209-3290.

Do you still accept paper (mailed) abstracts?
Yes, you may submit a paper abstract. However, if an abstract is submitted on paper, the author and all authors will be precluded from submitting a more formal version of an abstract. Submissions should be sent to the APS Meetings Department, One Physics Ellipse, College Park, MD 20740-3844. Paper abstracts must be received by the abstract deadline. The APS cannot be responsible for mail delays.

Final Tips
DO NOT WAIT UNTIL THE LAST MINUTE! We cannot stress this enough. Our system becomes quite busy during the last hour of a major deadline. The system traffic can drastically reduce the response time of our server. As a result, e-mail messages, including template requests and log number assignments, are often delayed. Send your abstracts early to avoid delays and aggravation.

Make sure your meeting ID is correct—for example, MAR98, not APSMAR98 or MARCH98.

Do not delete bracket sets {} or command lines (which start with a “\”) in the electronic template. The system requires this information to read the file. Send only uncompressed and unattached files in ASCII format with line breaks. If your word processing program does not allow you to save with line breaks, you will have to manually insert them. Line breaks ensure that the body of your abstract does not truncate before the abstract is complete.

Career Directions

On the opposite page, we have introduced a feature to appear occasionally in APS News called Career Directions. Career Directions are written by physicists who have recently successfully undergone the process of landing a job. Most articles will focus on changing fields, as is the case of the first article by Hughes Sicotte. Authors will describe why they did it, how they did it, and, often offer practical advice to others contemplating a similar move. Career Directions will also be posted under the Career/Employment button on the APS Homepage [www.aps.org].

Please let us know if you find this column useful. For those who have recently gone through a significant career change and would like to have an article considered for Career Directions, please contact Barrie Ripin, Editor, APS News at: [ripin@aps.org].

Make sure your abstract is correct (i.e. spelling of author names, titles, etc). We cannot accept resubmissions or corrections after the abstract deadline has passed. Send your abstract to the abs-submit@aps.org address; do not simply “reply” to the message that included the template.

Good luck!
Starting a Pyramid

by Hughes Sciotto, National Library of Medicine, National Institutes of Health

A PhD will open more doors, finish it
Program, and where some of the skills
yet any institutionalized training
November 1997 APS News
www.jpmorgan.com/CorpInfo/Careers/
career path as Quant Jock (see http://
ics (http://www.nserc.ca/programs/
half the salary of an academic physicist to
anian citizen) that, for two years, provides
ward my PhD, I should finish my thesis.
ese. Another need is to start learning the
10-15 years from
residents react and produce graduates with the
or toward another field entirely. This is
strong financial and professional incentives
We've all heard of the financial services
or find one's own new opportunities or
havior (you can start your searches at http://
touch with people, to acquaint yourself with
Sloan-DOE Postdoctoral Fellowships in Molecular Biology
The Allred P Sloan Foundation and the US Department of Energy are supporting ten postdoctoral fellowships to catalyze career transitions into computational molecular biology from physics, mathematics, computer science, chemistry and related fields. These fellowships will give young scientists an intensive two-year postdoctoral opportunity in an appropriate molecular biology laboratory. Ideal candidates will have strong educational backgrounds in such areas as physics and wish to bring these backgrounds to bear upon computational molecular research facilities.

Lesson 1
Look for fields where there is a large potential for growth, where there is not yet any institutionalized training programs, and where some of the skills physicists have acquired are required to do the work.

The first step is to decide what career to pursue. In grad school my excuse for not thinking about this was that if you spend too much time worrying about alternate careers, you'll work yourself right out of a career in physics. While there is wisdom in this, you have to ask yourself: What do I want to have achieved 10-15 years from now? This whole process is very personal, so make sure you take the time to find out about fascinating opportunities.

One about one into my thesis work I saw, as my advisor had warned me, how rapidly my field was changing. Search for solving the mysteries of the universe and getting paid for it! My first thought was that since I had already invested much time into my PhD, I should finish my thesis.

Lesson 2
A PhD will open more doors, finish it if you've started it.

Many physicists can move toward industrial physics, but for many the transition is not an option. Although a theorist, I have enough experimental background that I could probably have made the transition using a Canadian program (I am a Canaadian citizen) that, for two years, provides half the salary of an academic physicist to move into industrial physics (http://www.nserc.ca/programs/irfen.htm).

We've all heard of the financial services sector, & there are many other fields that are willing to pay physicists, and you can find websites to help you find these new opportunities (http://www.nsf.gov/infra.html). One of the high paying opportunities is working for the National Security Agency.

Lesson 3
It’s not only what you can do that matters, it’s what you want to do.

Near the end of my thesis my funding ran out. My PI wanted me to do more of the same. So I took a job as a postdoc and lab assistant in the chemical engineering department. This turned out to be helpful later on as it gave me a base to understand many experimental biology procedures.

Lesson 4
Broaden your skills and acquire marketable skills whenever you can.

This means that everybody should use C or C++ at least some of the time instead of FORTRAN.

I kept asking myself where the job is, which field will be booming? Some of the best leads I got were from talking to friends, colleagues, and acquaintances, as recommended many times in stories I read on the Young Scientist Network.

Lesson 5
Ask for advice from people you know.

A friend, working at Bell Labs, is convinced that wireless communications will revolutionize the world. Another friend started doing commercial artificial intelligence (you can start your searches at http://www.ai.mit.edu/) and was convinced that wireless communications will be the next revolution that would change humanity, the control of the genetic material! Since there was no unique training path, I decided to learn the principles of the field. I also learned to look for clues in other analysis skills to those problem while learning the required biology. I nevertheless noticed that most people in that field had some background in computing and were learning the computing aspects, so I probably needed to learn a minimum of biology.

While questioning discretion (you don't want to be tagged as somebody leaving the field) certain colleagues whose research had some biological connotation, learned that some of my colleagues were working on bio-informatics topic in their spare time. I learned as much as I could about their research, and that got me started. I knew I could do that kind of work, and I found a way to make myself valuable from day one. When you’re being retained, somebody has to gamble on you. They are more likely gamble if they can see the immediate return.

Lesson 6
Use your alma mater and present institution. Researchers in your own institution will usually talk to you, even if you are not in their field.

To find a position, there is no magic. Find out who has money and power to hire you, what they do, and how their skills might be relevant to their needs. Decide what skills you have (or will have) to offer, what skills you don’t have, and bring them to the interview, and what you expect to get. Be ready to explain why you want to change fields.

To find job leads, I started by using Lycos, Alta-Vista, and Webcrawler (These services, unlike “best-of” services like Yahoo, index and rate pages for web browsing). Since you don’t know is to search the funding agencies’ websites.'
Physicists To Be Honored at November Meetings

Five physicists will be honored for their work in the physics of fluids. The 1997 Fluid Dynamics Prize and Otto Laporte Award will be presented during the annual fall meeting of the Division of Fluid Dynamics in San Francisco, California. The 1997 James Clerk Maxwell Prize, Excellence in Plasma Physics Award, and the Outstanding Doctoral Thesis in Plasma Physics Award will be presented during the annual fall meeting of the Division of Plasma Physics in Pittsburgh, Pennsylvania.

1997 FLUID DYNAMICS PRIZE

Established in 1979, the prize is now supported by the American Institute of Physics journal Physics of Fluids and friends of the Division of Fluid Dynamics to recognize and encourage outstanding achievement in fluid dynamics research.

Louis Norberg Howard
Florida State University

Citation: “For fundamental theoretical concepts in the theory of turbulence, stability, saturation and straining of fluid flows, and other fluid dynamical problems, including upper bounding theory of stochastically stationary turbulence, semicircle bound for the stability of geophysical flows, the spin-up problem, and reaction-diffusion and double-diffusion problems.”

Howard received his PhD in mathematics from Princeton University in 1955. After lecturing there in mathematics and a short tenure at the California Institute of Technology, he joined the faculty of MIT in 1955, where he has been professor emeritus since 1981. Earlier, in 1981, he moved from Florida State University, becoming professor emeritus in 1996. His work has largely been in the field of fluid mechanics, especially hydrodynamic stability, geophysical fluid dynamics and some aspects of turbulence. Other aspects of applied mathematics have also received his attention, especially reaction and diffusion equations and, most recently, models of semicrystalline polymers.

1997 OTTO LAPORTE AWARD

Established in 1985 by Friends of Otto Laporte, this award is given by the School of Fluid Dynamics to recognize outstanding research accomplishments pertaining to the physics of fluids.

Marvin Emanuel Goldstein
National Aeronautics & Space Administration

Citation: “For his seminal theoretical elucidation of the role of receptivity and nonlinearities in the excitation of turbulence in shear flows, for his discovery that capillary forcing can be the source of absolute instability in a liquid jet, for his leading contributions to aerostatistics and rapid distortion theory and for his exemplary role in the fluid dynamics community.”

Goldstein is currently chief scientist of NASA’s Langley Research Center. His research areas include transition and turbulence in fluids, aerelasticity and aerostatistics, and fundamental theory of pattern formation. He is a member of the Executive Committee of the APS Division of Fluid Dynamics, has published more than 100 technical papers and authored a book on aerostatistics which has been translated into Russian and Japanese.

1997 AWARD FOR EXCELLENCE IN PLASMA PHYSICS RESEARCH

Established in 1981 by friends of the APS Division of Plasma Physics to recognize a particular recent outstanding achievement in plasma physics research

Fred Michael Levinton
Paxon and Physics Technology, Inc.

Citation: “For his concept and development of the National Stark Effect diagnostic technique for measuring the local magnetic field inside a plasma, providing information critical to understanding magnetic plasma confinement.”

Levinton received his PhD in physics from Columbia University in 1983. Following postdoctoral work, he joined the Plasma Technology Division of JAYCOR in 1984 and worked at the Princeton Plasma Physics Laboratory on the S-1 spheromak, studying equilibrium and confinement. On the PHX-M tokamak, he developed the motional Stark effect (MSE) diagnostic to measure the internal magnetic field of a high-temperature plasma. In 1990, he was a founding member of Fusion Physics and Technology, working with the MSE diagnostic to measure current profile effects on the sawtooth instability in plasmas. Using the MSE diagnostic, he developed a reversed magnetic shear q-profile which led to the enhanced reverse shear mode on TFTR. His recent efforts have been to study the effect of reversed magnetic shear on plasma transport and stability, and the extension of the MSE diagnostic to measurement of electric fields of plasmas.

1997 OUTSTANDING DOCTORAL THESIS IN PLASMA PHYSICS AWARD

This award, established in 1985 and currently sponsored by General Atomics, is intended to provide recognition to exceptional young scientists who have performed original doctoral thesis work of outstanding quality and achievement in the area of plasma physics.

Stefano Coda
M.I.T.

Citation: “For development and application of phase-contrast imaging techniques to measurements of turbulence in high-temperature plasmas, including critical comparisons to theory and the discovery of radial modes in the plasma edge.”

Born and raised in Italy, Coda received his undergraduate Laurea degree in physics from the University of Pisa, Italy, in 1986. For his undergraduate thesis, he worked for one year on the JET tokamak in Culham, UK. After two years working with the VersaTor-II team at MIT, he moved to General Atomics in San Diego, where he carried out his graduate dissertation research. He received his PhD degree in 1997 from MIT. Coda is presently working on electron cyclotron heating and confinement studies on the TCY tokamak at the CRPP laboratory of the Swiss Federal Institute of Technology in Lausanne, Switzerland.

1997 JAMES CLERK MAXWELL PRIZE

Established in 1975 and funded by Maxwell Technologies, Inc. to recognize outstanding contributions to the field of plasma physics

Charles F. Kennel
U.C.L.A.

Citation: “For his fundamental contributions to the basic plasma physics of collisional sheath, magnetic reconnection and quasilinear theory, and to plasma astrophysics - including the Van Allen radiation belt and the Crab Nebula.”

Kennel received his PhD from Princeton University in Astrophysical Sciences in 1964. He has been a tenured member of the UCLA Department of Physics since 1967, and was its Chair from 1983-85. For the past thirty years, Kennel has been a leading plasma theorist in space physics and has made fundamental contributions to basic plasma physics and plasma astrophysics including developing relativistic MHD wind theory which has been widely used in astrophysics. He has served on a wide variety of scientific panels, advisory boards, and councils, serving most recently as Associate Administrator of NASA for Mission to Planet Earth from 1993 to 1996 and in 1996 assumed his position as Executive Vice Chancellor at UCLA.

Presentation of check to endow the APS Joseph F. Keithley Award for Advances in Measurement Science

Barry C. Walker
State University of New York, Stony Brook

Citation: “For his thesis entitled, ‘One- and two-electron ionization of atoms by a strong laser field.’”

Born and raised in Oklahoma, Walker received his B.S. in physics and chemistry from Point Loma Nazarene College in San Diego, California, and his PhD in physics from the State University of New York at Stony Brook in 1996. His research expertise is in the experimental study of light matter interactions, specifically investigating atoms and molecules in perturbative ‘multiphoton’ and nonperturbative ‘strong’ optical fields. During his graduate study, he worked as a research assistant at Brookhaven National Laboratory, researching the interactions of atoms with intense laser radiation and two electron ionization dynamics, which formed the basis for his doctoral thesis.

Walker is currently a research assistant at the University of California, San Diego, where he designed and built a unique ‘hybrid’ compressor for terawatt peak power lasers. He intends to continue his investigations of intense field phenomena by expanding the field strengths, and is also interested in the time dependence of 50 to 200 eV single photon processes.

Paul A. Vetter
University of Washington

Citation: “For his thesis entitled, ‘Precise measurement of parity nonconserving optical rotation in atomic shallium as a test of the electroweak standard model.”

Vetter received his B.A. in physics at Amherst College in 1990, working on a new technique for highly precise Stark frequency shift measurements in alkaline atoms. He received a Ph.D. from the University of Washington at Seattle in 1995. His thesis work was a precise optical rotation measurement of a parity violating atomic transition amplitude in thallium. The parity violating amplitude is about 10⁻¹¹ times the allowed electromagnetic transition of interest. Measurements of atomic parity violation help to constrain various theoretical extensions to the Standard Electroweak Model and are also uniquely sensitive to internuclear weak interactions.

Today, Vetter is a postdoctoral research fellow at Lawrence Berkeley National Laboratory. His current projects include magneto-optic trapping of radioactive Na²¹ to improve measurements of fundamental weak interactions in beta decay, and a measurement of the beta-gamma directional correlation in Na²¹.

Two Young Physicists Receive DAMOP Thesis Award

Paul A. Vetter and Barry C. Walker were selected as the 1997 recipients of the DAMOP Thesis Award. Sponsored by members of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), the award is intended to recognize doctoral thesis research of outstanding quality and achievement in atomic, molecular or optical physics, and to encourage effective written and oral presentation of research results.

Barry C. Walker

State University of New York, Stony Brook

Citation: “For his thesis entitled, ‘One-and two-electron ionization of atoms by a strong laser field.’”

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Presentation of check to endow the APS Joseph F. Keithley Award for Advances in Measurement Science

Pictured are (from left to right): Allan Clark (chair, Keithley Award Selection Committee), Judy Franz (APS Executive Officer), Tom McFrah (APS Treasurer), Robert Ehrman (Keithley Instrumental and past chair of Topical Group on Instrument and Measurement Science), and Barrie Ripin (APS Associate Executive Officer).
Announcements

APS Mass Media Fellowship Program - Summer 1998

Deadline: 15 January 1998

In affiliation with the popular AAAS program, APS will sponsor two ten-week fellowships for physics students to work full-time over the summer as reporters, researchers, and production assistants in mass media organizations nationwide.

UPURPOSE
The intent of the program is to improve public understanding and appreciation of science and technology and to sharpen the ability of the fellows to communicate complex technical issues to non-specialists.

ELIGIBILITY
Priority will be given to graduate students in physics, or a closely related field, although applications also will be considered from outstanding undergraduate and postdoctoral researchers. Applicants should possess outstanding written and oral communication skills and a strong interest in learning about the media.

STIPEND
Remuneration is $4,000, plus a travel allowance of approximately $1,000.

TERM
Following an intensive three-day orientation in early June at the AAAS in Washington, winning candidates will work full-time through mid-August.

SELECTION PROCESS
During February, a review committee will screen completed applications received by the January 15 deadline. Files of the four or five most qualified applicants will be submitted to host media organizations for final selection in April.

TO APPLY
The following materials must be received at the address below by 15 JANUARY:
• Completed application form (available from the program office, below, or at http://www.aps.org/public_affairs.html)
• A copy of your résumé
• Brief sample(s) of your writing (3-5 pages on any subject, written in language understandable to the general public—no technical papers, please), on single-sided, 8 1/2” x 11” paper, unstapled
• Three letters of recommendation (to be mailed directly to the program). Two of these letters should be from faculty members; one should be a personal reference.
• Transcripts of your undergraduate and graduate work (to be mailed directly to the program)

MAIL TO
APS Mass Media Fellowship Program
529 14th Street, NW, Suite 1050, Washington DC 20045
(202) 662-8700 • email: opa@aps.org

Distinguished Lecturers for Plasma Physics

The Division of Plasma Physics of the American Physical Society is pleased to announce the Distinguished Lecturers for Plasma Physics for 1997-1998. This program is intended to share with the larger scientific community the most exciting recent advances in plasma physics.

The following Distinguished Lecturers have been chosen by the Division of Plasma Physics of the American Physical Society:

Dr. William Krueer.

“The interaction of plasma with intense lasers and the quest for fusion” Lawrence Livermore National Laboratory, Email: krueer@lrl.gov

Professor Thomas O’Neil.

“Equivalibita and dynamics of pure electron and ion plasmas” UC San Diego, Email: jacpla@sdphu1.ucsd.edu

Professor Stewart Prager.

“Dynamo and chaotic magnetic fields in plasmas” Univ. of Wisconsin, Email: prager@uuno.physics.wisc.edu

Professor Francis Chen.

“Computer chips to potato chips: the challenge of plasma processing” UCLA, Email: fichen@ee.ucla.edu

Dr. Michael Zarnstorff.

“Suppression of turbulence in plasmas: an experimentalist’s view” Princeton Plasma Physics Laboratory, Email: zarnstorff@pppl.gov

Under the Plasma Travel Grant Program funded by the Department of Energy, the Lecturers are available for talks at US colleges and universities for the academic year 1997 - 1998. Their travel expenses will be supported by the grant; preference will be given to invitations from colleges and universities that do not have substantial programs in plasma physics. The Lecturers may be invited by contacting them directly.

APS/AIP Congressional Science Fellowships: 1998-1999

The American Physical Society and The American Institute of Physics are currently accepting applications for their 1998-1999 Congressional Science Fellowship Programs. Fellows serve one year on the staff of a senator, representative, or congressional committee. They are afforded an opportunity to learn the legislative process and explore science policy issues from the lawmakers’ perspective. In turn, Fellows may lend scientific and technical expertise to public policy issues.

QUALIFICATIONS
include a Ph.D. in physics or a closely related field, a strong interest in science and technology policy and, ideally, some experience in applying scientific knowledge toward the solution of societal problems. Fellows are required to be US citizens and, for the AIP Fellowship, a member of any of the AIP Member Societies at time of application. In exceptional cases, the Ph.D. requirement may be waived for applicants with compensating experience.

TERM OF APPOINTMENT
for both fellowships is one year, beginning 1 September 1998 with participation in a two-week orientation in Washington, organized by the American Association for the Advancement of Science. Choice of congressional assignment is reserved to Fellows.

A STIPEND of up to $46,000 is offered, in addition to allowances for relocation, in-service travel, and health insurance premiums.

APPLICATIONS should consist of a letter of intent, a two-page resume, and three letters of reference, accompanied by a cover sheet indicating: name, address, phone, email, references, US citizenship, Ph.D. status, society membership, and where you learned about the programs. All submissions should be on standard 8 1/2” x 11” paper, single-sided and unstapled, and should be sent directly to the address below. Candidates should state in the letter why they are applying and briefly describe their public service experience. Letters of reference should discuss not just the candidate’s competence as a physicist, but also the education, experience, and attributes which would particularly qualify the candidate to serve as a Fellow. Unless otherwise specified in the letter, the applicant will be considered for both APS and AIP fellowships.

ALL APPLICATION MATERIALS MUST BE POSTMARKED BY 15 JANUARY 1998.

APS/AIP Congressional Science Fellowship Programs
529 14th Street, NW, Suite 1050
Washington, DC 20045
(202) 662-8700 • email: opa@aps.org
APS and AIP home pages: www.aps.org and www.aip.org

Please note that other physics-related Congressional Science fellowship programs are run by The American Geophysical Union (202-462-6900) and The Optical Society of America/The Materials Research Society (contact: Gail Ouse/412-367-3004). Please contact these societies directly for information on their Fellowships.

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T he topic of change and its relationship to our souls reminds me of a time in my cherished academic life. I was a graduate student for the physics department to the university provost. The provost sighed and said, “Why is it that you physicists always argue that it is so important that...” The math department requires nothing of me but money for paper, pencils, and books, and the philosophy department is better still. It doesn’t even ask for erased.”

For a瞬间, perhaps, my colleague might have wished he had been a stereotypical philosopher in that situation— assured of existence in that often intangible and unmeasurable environment. The meaning and accountability are now more the order of the day in academia as well as government. The Governmental Performance Results Act (GPRA) is upon us. The US Congress passed the Act, and President Clinton signed it into law, in 1993 with an eye to improve the operation of all government programs by establishing a system of program performance goals and a method to measure the results. Starting with FY 1999, all federal budgets will be performance based.

I doubt that any one of us disagrees with the belief that excellent research in science and engineering does benefit society in countless ways, making it one of the best investments taxpayers can make for the future of our country. Moreover, many researchers choose their fields and pursue their goals with societal benefits in mind, even if the research itself is quite fundamental and intellectually challenging. But, measuring those benefits, let alone predicting them rightfully, gives us pause. And, increasingly, that is what we are going to be asked to do in a balanced budget environment.

With all that in mind, I’d like to talk about some of NSF’s key investments in science and engineering for the coming year. Our FY98 budget request strongly reaffirms our commitment to continue to link the research process with teaching and learning. Our bottom line increases by 5 percent, to a total of $5.3 billion. Most of our research budget focuses on core support of excellent research in all disciplines of science and engineering.

The NSF’s request for the Physics Division for FY 1998 is $148.22 million, up from $138.72 million in FY 1997, which was a 6 percent increase. Our Project Research support constitutes roughly $104 million of this figure, with the remaining $44 million funding being for fellowships to new entrants and international programs. I should also note that these numbers do not include construction for the Laser Interferometer Gravitational-Wave Observatory (LIGO), most of which did not come from the physics budget.

In order to maintain strong support for the core programs of each of the disciplines, we are focusing some of our budget on a few broad areas that the research community considers to have particular promise. One of these is Knowledge & Distributed Intelligence (KDI), a broad-based, multi-disciplinary effort to keep academic science and engineering at the leading edge of information technologies and to insure that the rewards of increased productivity are available to advance those technologies. It is perhaps the most encompassing venture NSF has ever pursued, cutting across all fields of science and engineering and touching education at all levels. Clearly, it is relevant to the trends and technologies that provide opportunity in our economy and society, from networks to sensors to virtual reality systems.

KDI will support research to help make the next quantum leap forward in terms of both scientific progress and consequent economic and societal benefit. New approaches to extracting, intelligent Web browsers, technologies for learning, and smart, efficient and reliable methods of handling huge amounts of data are all a few of the advances and benefits that have deep roots in academic research across a wide range of fields and disciplines.

For FY98, we are seeking an increase of nearly $60 million for our portfolio of KDI activities. This will cover NSF’s role in the Next Generation Internet, as well as a set of multidisciplinary activities such as learning and intelligent systems and decision support networking. The research focus in these areas will include how to merge computation, data and representation for highly complex problems to support learning and environmental modeling. More broadly, we’ll be trying to determine ways to manage and make productive use of the flood of information released by emerging technologies.

An overarching theme for KDI and NSF’s programming generally is our commitment to linking research with education. NSF is launching an experimental, $20 million activity to broaden the understanding, development and networking. The research focus in these areas will include how to merge computation, data and representation for highly complex problems to support learning and environmental modeling. More broadly, we’ll be trying to determine ways to manage and make productive use of the flood of information released by emerging technologies.

Scientists are powerful players in contemporary society but we are discovering that the exercise of that power to do research and create new abilities from new knowledge carries with it responsibilities beyond our laboratories. We must help the public understand the nature and the value of science. Whatever our national languages, research is a global endeavor. In order to be better researchers, teachers, and communicators, scientists must be firmly in place and development emerges or overnight when a new development emerges or when a crisis occurs. It must be firmly in place and functioning with trust on both sides.

NSF surveys show a strong national commitment to science and appreciation of its value. Nevertheless, those same surveys indicate that the public has little confidence in its ability to understand that same science. This says more about the science community than it does about the public. Over the last 50 years, scientists have been accustomed to working in the relative isolation of universities and laboratories, immersed in the autonomy of our own work. At the same time, the world outside has been increasingly defined in scientific and technological terms. Thus, the public does not have good grounding for most issues of science and society. And the science and engineering community does not have good grounding in dialogue with the public about either the science or its societal implications and concerns. We cannot afford for this situation to continue.

The point is not to know the difference between a quark and lepton. Even Ph.D. scientists would be hard put to explain thoroughly grounding in every field. What is needed is the ability to probe, to question, to grasp concepts, and to develop some familiarity with the way that forms in the research community about a discovery or advance. The ability to grasp concepts, principles, and processes is a path to holistic citizenship.

We often find it hard to explain even briefly the detail of our disciplinary work. However, in order to bridge the gap between science and society, and between the scientist and the public, we will have to move to a different level of discourse. We can begin to make our knowledge more in terms of the process by which we learn and discover: the demanding, testing, skeptical regimen of the scientific method. We can begin to talk a little about how Albert Einstein’s theories and investigations were an almost impenetrable mystery to his second wife, Elsa. “Couldn’t you tell me a little about your work?” she complained one day. “People talk a lot about it, and I appear so stupid when I ask,” Einstein thought for a minute or two, frowning deeply as he searched for a way to begin his explanation. Then he faced cleared and smiled. “If I told you about my work, you know all about it, but can’t tell them, as it is a great secret!”

While we might appreciate Einstein’s humor, the reality is, the general public believes that we scientists do want our work to be a great secret. Unfortunately, we have not done a very good job of sharing the excitement of the new scientific knowledge or the adventurous nature of scientific discovery with the world at large. Yet it is the rest of society that supports the opportunity for us to pursue that satisfying work. I believe it must be our responsibility, in the role of “civil scientists,” to provide them the opportunity to learn about that which is so satisfying to us as scientists, and so important to society’s well-being.

The communication should not be a one-way process in which the scientist transmits knowledge by the public listens and learns. On the contrary, the research community has as much or more to learn from the public. How then does that happen? I believe there is a model for professional, and philosophical context in which all activity takes place in a society. This critical process of dialogue cannot be learned overnight when a new development emerges or when a crisis occurs. It must be firmly in place and functioning with trust on both sides.

APS News welcomes letters and submissions from its members regarding these and other issues.