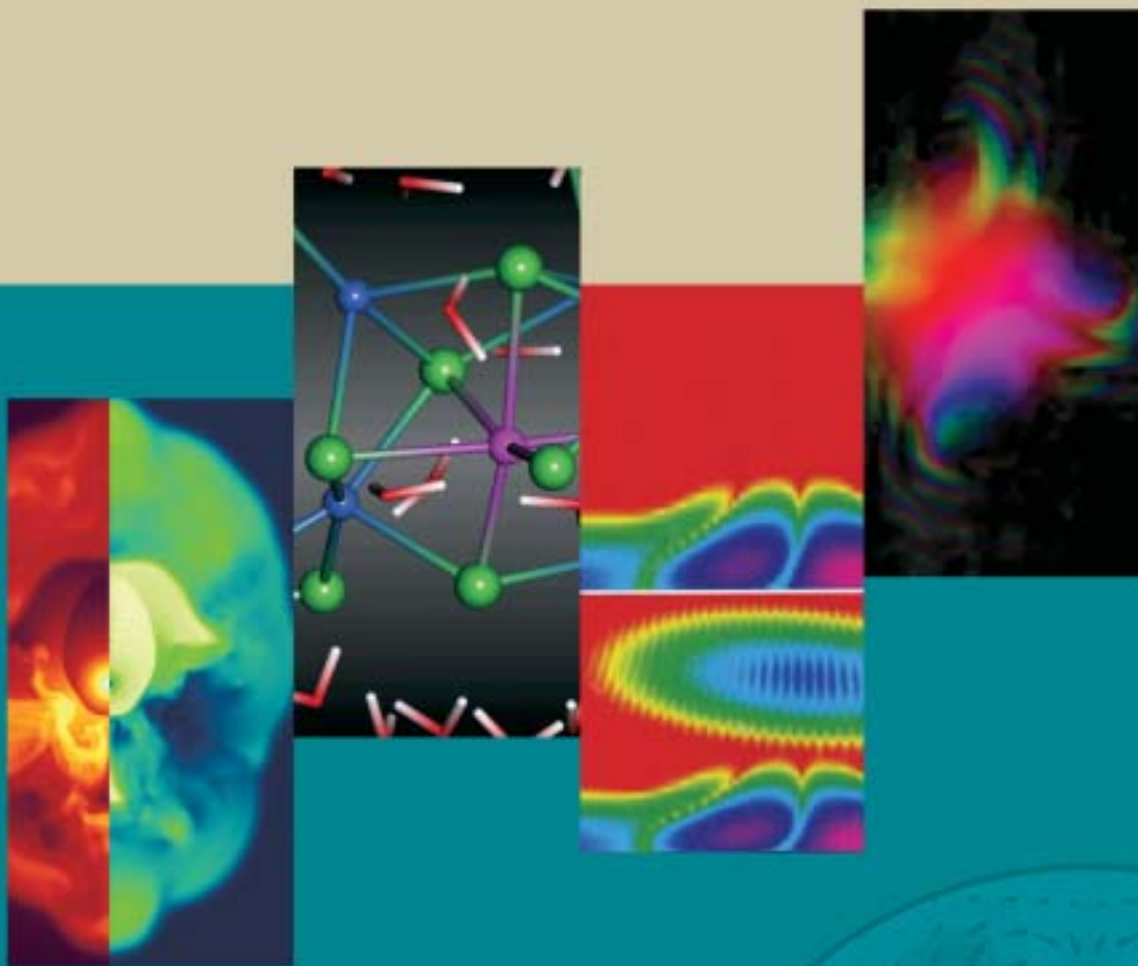




AMERICAN PHYSICAL SOCIETY



2003

ANNUAL  
REPORT

## PHOTO CREDITS

Cover (l-r):

Phys. Rev. Lett. 92, 011103 (2004) Pulsar Recoil by Large-Scale Anisotropies in Supernova Explosions

L. Scheck,<sup>1</sup> T. Plewa,<sup>2,3</sup> H.-Th. Janka,<sup>1</sup> K. Kifonidis,<sup>1</sup> and E. Müller<sup>1</sup>

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Phys. Rev. Lett. 92, 040801 (2004) Atomistic Mechanism of NaCl Nucleation from an Aqueous Solution

Dirk Zahn Max-Planck Institut für Chemische Physik fester Stoffe, Nöthnitzer Strasse 40, 01187 Dresden, Germany Also on page 5.

Phys. Rev. Lett. 91, 173002 (2003) Temporal Structure of Attosecond Pulses from Intense Laser-Atom Interactions

A. Pukhov,<sup>1</sup> S. Gordienko,<sup>1,2</sup> and T. Baeva<sup>1</sup>

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Also on page 2

Phys. Rev. Lett. 90, 243001 (2003) Molecule without Electrons: Binding Bare Nuclei with Strong Laser Fields

Olga Smirnova,<sup>1</sup> Michael Spanner,<sup>2,3</sup> and Misha Ivanov<sup>3</sup>

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Background image on front cover & pages 1, 9, 13:

Phys. Rev. Lett. 91, 224502 (2003) Traveling Waves in Pipe Flow

Holger Faisst and Bruno Eckhardt Fachbereich Physik, Philipps Universität Marburg, D-35032 Marburg, Germany

Background image on back cover & page 15:

Phys. Rev. Lett. 89, 075502, 2002, Structure of Intercalated Cs in Zeolite ITQ-4: An Array of Metal Ions and Correlated Electrons Confined in a Pseudo-1D Nanoporous Host V. Petkov, S. J. L. Billinge, T. Vogt, A. S. Ichimura, and J. L. Dye

Inside:

Page 3:

Simulated decay of Higgs boson in the future CMS experiment at CERN. CERN

Page 8:

A Gammashere is a high-resolution high-efficiency gamma ray detector used in studying rare nuclear processes. Lawrence Berkeley National Laboratory.

# APS IN 2003

During 2003, concerns about visa restrictions for international students and foreign scientific visitors to the U.S. dominated discussions wherever physicists gathered. Added restrictions threaten the future of the U.S. as a destination of choice for young scientists from around the world and as a favored location for international conferences and collaborations. Throughout the year, the American Physical Society worked hard to educate the government about the harm that this will cause to our nation and to assist individual physicists who were denied visas and those suffering major delays. Notwithstanding these developments, APS itself prospered greatly during the past year, as both its membership and its breadth of activities continued to grow.



Submissions to APS journals increased by 5%. The attendance at the March Meeting was the largest ever and the April Meeting was the largest in seven years. The APS financial reserves grew substantially as the stock market made a partial comeback. But best of all, researchers around the world continued to produce exciting new results. The Wilkinson Microwave Anisotropy Probe measured the microwave radiation across the entire sky with remarkably increased precision, indicating that dark energy is the most pervasive form of matter in the universe. A new type of hadron, called the pentaquark because it consists of five quarks rather than the usual two or three, was discovered and confirmed. Physicists created Bose-Einstein condensates of pairs of atoms at ultralow temperatures, thus opening a new window onto the phenomenon of superfluidity. Sandia's Z Machine, designed to initiate inertial-confinement fusion using x-rays created in a powerful electrical discharge, observed its first fusion reactions. Unexpected properties of novel materials, including new semiconductors, magnetic materials, multiferroics and superconductors, continued to be discovered. New insights emerged on the universal behavior of scale-free networks that account for phenomena ranging from biological cell regulation to the World Wide Web and the behavior of societies. Dramatic new advances in many-body theory were made that enable the understanding of the structure and properties of strongly-correlated materials.

In 2003, the Society's membership grew to 43,258, the first time in ten years that it has surpassed 43,000 members. Much of the recent growth can be attributed to a larger student membership, which bodes well for the Society's future. As an example of the vitality of physics students, the recently formed Forum on Graduate Student Affairs now has over 1000 members, and was responsible for co-organizing a very successful Canadian-Mexican-U.S. conference held in Mexico in October.

Funding for scientific research is an ongoing concern of the physics community. The APS Washington Office was very active during 2003 in arranging and organizing meetings of APS leaders and APS members with high-level officials in the Administration and members of Congress and Congressional staff. APS encourages all physicists to visit their Congressional delegations whenever they visit Washington, and APS staff members are prepared to help with such visits. The Washington office continued its efforts to increase grassroots lobbying and letter writing; 10,000 letters were sent during the past year, an all-time high for the Society.

The first major APS study in sixteen years, released in July, has attracted a great deal of attention in the media and on Capitol Hill. Entitled "Boost-Phase Intercept Systems for National Missile Defense," the report was the result of a two-year study by a team of twelve scientists and engineers. Originally planned as a review of existing work, the study developed into a research project that contains many original analyses and calculations.

A special task force on professional ethics initiated in 2002 conducted extensive surveys of department chairs, postdoctoral research associates, undergraduate students, and leaders of APS units. The task force reported to the APS Council in November on a broad range of issues that were raised, including co-authorship, the responsibility of mentors toward students, the need to promote education and discussion of ethics, and standards for archiving data electronically. APS is currently examining many of these questions, with special attention to concerns uncovered by the survey of postdoctoral members.

The "globalization" of physics continues at an accelerating pace. The discipline has become a thoroughly international enterprise, and the international activities of APS continue to grow. Efforts to reach out to colleagues around the world are increasingly important, and a new task force on Research Collaboration with Africa was established and is now hard at work. It was a pleasure for me to travel to Taiwan, Hong Kong and Germany, and to represent APS at international conferences in Cuba, Mexico, Spain and Italy during my year as President.

The following give a more detailed picture of the full spectrum of APS activities. The Society enters 2004 with much accomplished, but there is much more still to do.

A handwritten signature in cursive script, reading "Myriam P. Sarachik". The ink is dark and the background is light.

Myriam P. Sarachik  
APS 2003 President



# RESEARCH PUBLICATIONS

## RESEARCH PUBLICATIONS

That submissions to *Physical Review* were up last year is no surprise, but the fact that 2003's increase of 5.7%, more than double that of the year before, is a little startling. Improved systems and procedures have enabled the present journal operations departments to process the increase. On the other hand, the amount of time that an individual paper needs from an editor cannot be reduced beyond a certain point, and some additional editorial department positions may be necessary to handle the anticipated 28,000 submissions in 2004. The percentage increase in submissions has well outpaced the increase in overall staff in recent years, although desk space has nearly run out once again at the APS editorial office. The first piece of public space, a lunchroom annex, was devoured for offices in late 2003.

The electronic office project has entered its final stage. Crossdepartmental groups are working to develop a primarily web-based system which will replace the movement of paper files through the office as a means of initiating and recording actions on manuscripts. The new system will also make it easier for users to work from outside the building at Ridge, hence potentially relieving some of the space pressures on the office, as well as enable them to work with multiple operating systems and platforms.

The APS journals derive a considerable portion of their value from the work of referees, whose suggestions improve papers and whose recommendations help to decide what is published in *Physical Review*. The annual communication to referees, with information about the current status of papers sent to them in the past year, will be revived and modestly enhanced in 2004.

Two review committees working in 2003 recommended the reappointments of Robert Siemann, Editor of *Physical Review Special Topics: Accelerators and Beams* and Bernd Crasemann, Editor of *Physical Review A*. George Bertsch has announced his intention to retire as Editor of *Reviews of Modern Physics* at the end of 2005, and a review and search committee will be organized in the coming year. The committee reviewing *Physical Review Letters* is still at work and will report in 2004 on the mission, accessibility, coverage, and quality of PRL.

APS leadership has observed the launch of the Public Library of Science and other open access initiatives with great interest. A viable, scalable financial model for scientific publication would be a great relief to all parties, but whether the "author pays" approach will meet that need remains to be seen. In the meantime, for APS the strategy is to keep journal expenses low and look for further savings, to improve the quality and features of the online offerings and to maintain and safeguard a permanent archive.

As of December 2003, individuals are now able to receive email notice of the table of contents of a selected *Physical Review* journal or journals when each issue is complete. Alerts are delivered to a specified email address in either plain text (ASCII) or HTML format with links to abstracts and full text articles, although the latter would only be accessible to subscribers. The email alert service is available to anyone, regardless of APS membership or subscriber status. <http://ojps.aip.org/jhtml/APS/alert.jsp>.

At the editorial office one day last August, the lights flickered briefly, and then came back on. Some staff and guests in the building didn't realize until some time later that the eastern seaboard had suffered a massive blackout. They were "in the dark" about what had happened because the propane powered generator, installed in spring of 2003, had kicked in immediately with electricity sufficient to power the whole building. The blackout provided a useful and gratifying real-life test of this important component in the APS business continuity plan.

Ethics and misconduct in physics publication are a continuing concern in the wake of the two cases of data fabrication. APS Editor-in-Chief Martin Blume organized a workshop in October, held at the London headquarters of the Institute of Physics and attended by journal editors from around the world, on the subject of scientific misconduct and the role of physics journals in its investigation and prevention. With funding and approval from IUPAP, the workshop will produce a document containing guidelines for prevention of and response to misconduct for authors, journals, editors, institutions and others involved in the physics publication enterprise.

# SCIENTIFIC MEETINGS/MEMBERSHIP

## SCIENTIFIC MEETINGS

Both of the APS annual meetings were exceptionally large and lively in 2003. The 2003 March Meeting, held in Austin, Texas, had the largest attendance of any March Meeting — more than 5,600 attendees, about 2,000 of whom were students. There were approximately 700 invited talks and over 5,000 contributed talks presented at the meeting. Participants came from all 50 states, the District of Columbia, and 47 foreign countries. APS gained over 1,000 members as part of the March Meeting registration process.

Several special evening sessions were held. One entitled “Dreams for the Future of Physics” had a huge audience, which heard talks on the future of condensed matter physics, particle and nuclear physics, astrophysics, string theory and the physics of biology. A second on “Professional Conduct: What can we learn from recent events?” was also very well attended and led to a lively discussion following the presentations.

The Students’ Lunch with the Experts has become a very positive addition to the meeting. More than 250 students enjoyed the intimate format of sitting with an expert and participating in a stimulating discussion over lunch. This activity gets high ratings from the students.

For the first time, the Division of Particles and Fields held its divisional meeting jointly with the April Meeting in 2003. The meeting, held in Philadelphia, had the largest attendance since 1997. Over 1,400 participants from 46 states and 24 foreign countries heard plenary talks on topics such as extra dimensions, underground science, neutrinos, antimatter, gamma bursts, and the energy frontier.

DPF’s participation in the meeting led to a significant enhancement to the program. The Division sponsored 41 sessions, some jointly with other units, for a total of 377 papers. Four hundred and eighty-five DPF members attended the meeting. In addition, DPF sponsored a special session at the University of Pennsylvania in cooperation with the Physics Department there.

Two special evening sessions were held. The first “Public Affairs Forum: International Science and Large Scale Facilities” included a talk by Dr. Norman Neureiter, the science and technology advisor to the Secretary of State. The

second, a public lecture by Dr. Dudley Herschbach entitled “Ben Franklin’s Scientific Amusements,” was held at the Franklin Institute and attracted a good crowd.

As usual, there were additional meetings sponsored or co-sponsored by APS Units, fifteen in all. These included national meetings of the Divisions of Plasma Physics, Nuclear Physics, and Atomic, Molecular and Optical Physics, and Fluid Mechanics, as well as several meetings of Topical Groups and all of the APS geographical Sections.

## MEMBERSHIP

The APS membership continued to experience steady growth in 2003. The official APS member count at the end of 2003 was 43,258, the first time over 43,000 since 1994. Much of this growth could be attributed to the increasing number of student members. APS’s newest Units, the Forum on Graduate Student Affairs, the Topical Group on Hadronic Physics, and the California Section all had healthy growth.

A focus of membership recruitment in 2003 was attracting more industrial physicists to join and become involved in APS. A special, half-price membership campaign for industrial physicists was initiated, and the Committee on Membership reviewed the benefits of interest to industrial members. A new brochure highlighting programs and benefits for industrial members of APS was also created for use at meetings and in mailings. In addition, a new membership benefit, the Article Pack, was created. This will allow APS members to purchase and download 20 articles for \$50.00 from any of the Physical Review publications. It is expected that this service will be a valuable addition for members in smaller companies whose work overlaps with many different fields of physics. It should also be an attractive benefit for members at small colleges and universities.

The major effort to convert the outdated Association Management System (AMS) to a new web-based system was successfully completed in 2003. The AMS encompasses the entire membership database as well as auxiliary databases, and includes over 69,000 files. APS headquarters Information Technology staff worked closely with the Membership Department and many others at APS headquarters to provide a smooth conversion, without any negative impact on member services. Staff members are enthusiastic about the increased functionality of the new system, which will increase both efficiency and flexibility.



# PUBLIC AFFAIRS

The leaders of several APS Units requested a better system for holding their elections. In response, APS staff members developed a new, web-based voting system. This flexible application allows the Units to do all their ballot setup online, with results automatically tabulated and delivered. Those Units that have utilized the system report a significant increase in election participation.

The "Friends of APS" program recruits individuals in physics departments, national laboratories, and industrial companies who agree to assist the Society with communication and recruitment efforts. In 2003, the "Friends" grew in number to 76 and assisted with promotion of the Free Trial Student Membership and APS Fellow Member retention efforts.

## PUBLIC AFFAIRS

Science budgets, defense, energy, homeland security, visas, creationism, the environment, and the Administration's initiative for a hydrogen-based transportation economy dominated the APS Public Affairs agenda during 2003. Against the backdrop of a war with Iraq, a ballooning federal deficit and warnings of terrorist attacks, many of these issues posed a significant challenge for the APS. By year's end, APS, working with other organizations, had scored a number of significant victories, held its ground in other areas, and ceded territory in a few instances.

Following completion of doubling the NIH budget in FY 2003, the White House had promised to address budget needs of the physical sciences in FY 2004. But the presidential budget request fell far from the mark. Spending on defense was scheduled to soar, largely because of the planned Iraqi war, and federal revenues were expected to continue to shrink, because of tax cuts and the stagnant economy. Increases in science budgets, according to the White House, simply could not be accommodated. However, in the view of most science advocates, federal investment in the physical sciences, engineering, math and computer science, which had been underfunded for more than a decade, could not wait for a full economic recovery or dramatic reduction in external threats. The APS joined with other science societies and the National Association of Manufacturers to argue the case on Capitol Hill and at the White House.

In addition, the Washington Office organized Hill and Executive Branch meetings for APS Unit leaders, members

of the presidential line, Physics Policy Committee Chairman Burton Richter, and APS members who were in town on other business throughout the year. Letter writing campaigns at the March and April APS Meetings and responses to lobbying "Alerts" generated more than 10,000 communications to Congress and the Administration, a 40% gain from 2002. By year's end, in a tough fiscal climate, the multi-pronged advocacy efforts had produced respectable research budget increases for the DOE Office of Science (3.8%), NASA Space Science (11.7%) and NSF (5.0 %). However, the NIST core program declined 2.0% and DOD 6.1 Basic Research fell 0.9%.

APS Washington Office staff lobbied on R&D authorizations for the DOE Office of Science and for the creation of a new DOE Under Secretary for Science and Energy Research. The final version of the comprehensive energy bill, H.R. 6, contained strong budget numbers for DOE science, as well as very positive science authorizing language, but it failed to create the new Under Secretary position, which had been favored by the Senate and opposed by the House. The bill passed the House but remained stalled in the Senate, due entirely to unrelated issues.

In July, the APS made its own headlines when it released a major study on "Boost-Phase Intercept Systems for National Missile Defense." The strategy of boost-phase intercept, or BPI, is to shoot down the missile in the first few minutes after launch, while the rocket engines are still burning and before decoys can be deployed. The study focused on the technical feasibility of this strategy, and was conducted by an expert panel chaired by Daniel Kleppner of MIT and Frederick Lamb of the University of Illinois. After rigorous review, the study was approved by the APS Council before the release. The study was funded by grants from the John D. and Catherine T. MacArthur Foundation, the W. Alton Jones Foundation, and the Carnegie Corporation of New York.

The study gained wide attention in the media and among policy makers in Washington. It concluded that BPI will not be a viable strategy against solid-propellant ICBMs, and will have only limited applicability for defense against slower liquid-propelled ICBMs. However, the study found that BPI appears technically possible against short- or medium-range missiles launched from sea platforms off U.S. Coasts.

Consistent with the APS position statements of 2003 and 1997, the APS staff also lobbied on nuclear weapons re-

# INTERNATIONAL AFFAIRS

lated issues. In particular, staff worked with members of the Energy and Water Appropriations Subcommittee on the issue of “enhanced nuclear test readiness”, sought Congressional votes on nuclear test notification, and developed Hill briefing material on the Stockpile Stewardship program. In addition, working with Senate staff, APS assisted in organizing a seven-part seminar series in Congress, entitled Stockpile Stewardship and Nuclear Forces. Finally, the APS Panel on Public Affairs (POPA) National Security Subcommittee developed a preliminary discussion paper that makes recommendations on U.S. facilities for plutonium pit production.

In addition, the POPA Energy Subcommittee developed a discussion paper that made recommendations regarding President Bush’s Hydrogen Initiative. It is intended for distribution to Congressional staff and will be available early in 2004.

Late in 2002, the APS Council voted to establish a special task force on professional ethics. The task force, under the leadership of Frances Houle, worked throughout 2003, gathering survey information from many parts of the physics community. Among the recommendations that were included in the task force report to the November Council meeting were to broaden the APS Guidelines on Professional Conduct to include proper referencing, to consider developing materials that could be used in providing better education about ethical issues, to develop an APS statement on proper treatment of subordinates, and to consider forming a permanent APS committee on ethics.

APS was very active in defending the teaching of evolution, consistent with its position statements of 1999 and 1981. In particular, working with other scientific societies, APS coordinated responses in several states to challenges against the teaching of evolution. The coordinated responses successfully fended off assaults in Louisiana, New Mexico, and Texas.

## INTERNATIONAL AFFAIRS

2003 was a very active year for APS in the international arena. An issue of particular concern to APS was the continuing visa problems that foreign colleagues and students encountered and that impacted many physics departments, laboratories and US-hosted meetings. During the year, the APS International Affairs staff members were informed of visa denials and delays that affected more than

118 visa applicants. Of those individuals whose applications were delayed, many waited more than 5 months for a decision. APS staff members spent many days making inquiries on behalf of visa applicants as well as meeting with Congressional staff and government officials to discuss the general problem and possible solutions. The Society also created a web site that provides general visa information and guidance for the physics community.

In light of the fact that foreign-born scientists make large contributions to the U.S. scientific community, in June the APS Council passed a statement that called on “the United States Administration and Congress to implement appropriate and effective visa rules and government procedures that sustain science and technology.”

In July, the Council for the Inter-American Conferences on Physics Education convened its 8<sup>th</sup> International Conference on “The Teaching of Physics in Today’s World,” in Havana, Cuba. APS worked closely with the Cuban Physical Society, the American Association of Physics Teachers, and physics faculty at the University of Havana in planning this conference, which was a great success. APS President Myriam Sarachik, who grew up in Cuba, gave the opening talk using both English and Spanish.

In October, graduate students from the Canadian Association of Physicists, the Mexican Physical Society, and the APS jointly organized the first North American Graduate Student Physics Meeting: “Student Visions for Physics in the 21<sup>st</sup> Century.” The multi-disciplinary meeting was hosted by the Mexican Physical Society in Mérida, Yucatán. The leadership of the APS Forum on Graduate Student Affairs played a major role in planning the conference, and with the help of a grant from NSF, 46 graduate students from the U.S. were able to attend. Special topical and technical sessions gave students the opportunity to experience the breadth of physics and learn about new opportunities in the field. The conference also provided a setting in which students and scientists were able to meet and discuss their research as well as the directions physics is taking in the 21<sup>st</sup> century.

While the war in Iraq made it difficult for the APS and the Physical Society of Iran (PSI) to carry out plans for the exchange of representatives at each other’s annual meetings, the two communities were successful in organizing a joint workshop in Anzali, Iran on 29 September – 9 October. Members from the APS Division of Particles and Fields who attended reported that the scientific talks were high-quality.



# EDUCATION AND OUTREACH

APS President Myriam Sarachik established the Task Force on Research Collaboration with Africa. The task force is currently considering ways to increase networking and collaboration among physicists in Africa and strengthen the U.S. physics community's ties and interactions with African colleagues. In October, APS had the pleasure of hosting 20 scientists from Africa for lunch and an afternoon workshop on cooperation at APS headquarters in the American Center for Physics. The scientists were in the Washington, DC area at the invitation of the Division of Materials Research of the NSF.

The Committee on the International Freedom of Scientists was busy advocating on behalf of scientists around the world and in the United States. One success in 2003 was the acquittal of Russian physicist Valentin Danilov on charges of espionage. Danilov had been accused of selling classified information to China, information that he and scientists worldwide insisted had been available in the public domain for years.

In 2003, the APS increased the number of reciprocal membership agreements with other national physical societies to 41 by signing agreements with societies in Chile, Mongolia and Sweden.

Of special note, 2003 brought the retirement of the Society's first Director of International Affairs, Irving Lerch. Lerch was the first APS Director of International Affairs and served in this position for more than eleven years. He was responsible for enhancing the Society's cooperation with physicists and physics communities around the world and for developing an active and vital international program.

After an extensive search, APS was pleased to announce at the end of the year that Amy Flatten would become the new Director of International Affairs, beginning on February 1, 2004. Flatten has been with the White House Office of Science and Technology Policy for the past five years and has extensive experience in international science policy.

## EDUCATION AND OUTREACH

2003 was the second year of APS's major educational effort, the Physics Teacher Education Coalition (PhysTEC), which is a joint project with the American Association of Physics Teachers (AAPT) and the American Institute of Phys-

ics (AIP). PhysTEC's major goal is to work with universities to improve the physics education of prospective K-12 science teachers. Mentoring of new teachers is also a key PhysTEC activity. With funding from the NSF and Department of Education, the six initial PhysTEC universities completed their first full year of implementation. Faculty members in each physics department worked with colleagues in their school of education and with a local master teacher to redesign their introductory physics courses to foster inquiry-based learning. The PhysTEC project leaders have now begun to recruit additional universities with the vision of eventually establishing twelve model programs. A seventh university was added in the fall of 2003.

Staff members at APS, AAPT, and AIP work with faculty members at PhysTEC institutions to help them provide a program for teachers that emphasizes interactive engagement and a student-centered approach to learning science. Faculty members participating in PhysTEC are busily involved with revisions of physics and science methods courses and are restructuring the certification process for both secondary and elementary pre-service teachers. Several sites have begun an active induction/mentoring program for their novice teachers. At least one institution is using PhysTEC as a model for systemic change throughout the university.

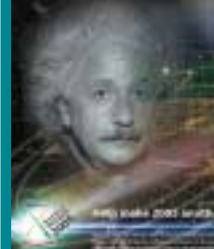
The APS organized a conference called "Physics on the Road." Held at Colorado State University, it brought together 50 physicists from across the country who are experienced in designing and providing year-round traveling physics hands-on exhibits, demonstrations, and displays, as well as some who are interested in initiating similar outreach programs. Participants shared ideas and information and began planning for some special events for the World Year of Physics 2005.

During 2003, APS completed its project to translate the popular hands-on workbook, "String and Sticky Tape Experiments" by Ron Edge, into Spanish. The translation and editing was completed and 2,500 copies of the book were produced. Copies were sent to Mexico, Spain, and other Spanish-speaking countries. Several hundred copies were also sent to Hispanic-serving school districts and teachers in the United States. This effort was supported by a grant from the NSF.

The annual Teachers' Days at the March and April meetings continued to offer high-quality professional develop-



# PUBLIC INFORMATION



ment for local high school physics teachers. Sixty-five teachers participated in Austin and seventy-eight in Philadelphia. These Teachers' Days feature research talks, hands-on workshops, and "lunch with a physicist," with research presenters and lunch-guests drawn from meeting attendees.

APS, through the efforts of the Committee on the Status of Women in Physics (CSWP), continued its active program of site visits to universities and national laboratories to assist in improving the climate for women physicists. Four universities were visited in 2003. Among its other activities at the 2003 March Meeting, CSWP hosted a special panel discussion on "Women in Physics: Title IX and the Need to Change" which attracted nearly 100 participants. The APS brochure, "Physics in Your Future," which features women in physics, continued to be in great demand. More than 3,000 copies have been distributed free of charge to educators, students, and their parents.

For the twenty-fourth year, APS sponsored its annual Scholarships for Minority Undergraduate Physics Majors. The Committee on Minorities ensures that recipients are provided with both an on-site mentor and a Committee-member mentor who interacts with the student by email. The Committee on Minorities and the Committee on the Status of Women in Physics worked together on a site visit to NASA-Goddard.

The APS Council approved a new APS award for Excellence in Physics Education. The award is distinctive in that it is intended to be given primarily to a team or a group, such as a physics department, rather than to a single individual. Among the accomplishments to be recognized by this new award are outreach programs and outstanding teacher enhancement or teacher preparation programs. It is envisaged that the award will be given yearly and carry a stipend of \$5,000. Efforts are now underway to raise sufficient funds to endow the award.

APS initiated a new online job center (see <http://careers.aps.org/>) with the help of the American Institute of Physics. This should be of great benefit to both job seekers and employers.

## PUBLIC INFORMATION

Launched in November of 2000, Physics Central, the APS's web site for the public, has seen the number of hits to the site continue to rise steadily, with over two million recorded in a typical month in 2003. Physics Central also consistently ranks first or second on both Google and Yahoo! among physics sites.

In July, Physics Central was chosen as one of the winners of the coveted Sci/Tech Web Awards for 2003 by the editors of Scientific American.com.

The citation for the award reads: "Translating the often esoteric world of physics to the layperson is no small feat, but this site pulls it off with humor and élan. Learn about faraway galaxies under the rubric 'Twinkle, twinkle, little tadpole,' or get to know a hydrogen isotope called the 'Doo-wop Deuteron.' The site also features excerpts from papers by famous physicists, and the entertaining 'advice' column, 'Dear Lou,' penned by Professor Louis Bloomfield, author of the perennial favorite, *How Things Work: The Physics of Everyday Life*. Physics Central also features a staggering array of links to the best sites for keeping up-to-date on everything from open-heart surgery to baseball bat dynamics."

More information about the award can be found at [www.sciam.com](http://www.sciam.com), and of course Physics Central itself is at [www.PhysicsCentral.com](http://www.PhysicsCentral.com).

APS also has an active Media Relations effort, which works to increase coverage of physics in the popular media, and to help science journalists keep informed of the latest physics news. The head of media relations played a key role in generating the extensive press coverage that accompanied the release of the APS's report on Boost-Phase Missile Defense in the summer of 2003. In collaboration with AIP, the APS coordinated press coverage of the March and April meetings. APS also provided support to units including DAMOP, DPP, and GSCCM in publicizing their annual meetings. Data showed that 5-10% of all physics research coverage in 2003 was directly attributable to the activities of the collaboration of APS Media Relations, APS's *Physical Review Focus*, and AIP Media and Government Relations. Physics promoted by these groups appeared regularly in the *New York Times*, *Washington Post*, *Wall Street Journal*, *USA Today* and *Associated Press*. Increased cov-



# PRIZES AND AWARDS

erage of physics research was seen in smaller newspapers throughout the U.S., an audience specifically targeted in 2003. Articles in the media on research published in APS journals other than *Physical Review Letters* increased in 2003, particularly *Physical Review C, D* and *E*.

Another way that APS informs the public is via the *Physical Review Focus* web site (<http://focus.aps.org>). This site explains selected research articles from *Physical Review* journals in plain English, bringing the latest discoveries to physicists, physics students, and science journalists, with articles that go deeper than typical stories in the press. In September, 2003, readers of *Focus* were asked how they use the site for education, and glowing reports were received from high school and college teachers worldwide. Traffic in 2003 on the web site increased to over 20,000 hits on the home page per month, and *Focus* continued to provide story ideas to journalists at publications including *Science*, *Nature*, *Science News*, and *New Scientist*.

APS preparations for the World Year of Physics 2005 intensified in 2003. A full-time World Year of Physics coordinator position was filled, and APS sent a representative to the WYP preparatory conference in Graz, Austria in July. Funding proposals for APS activities were submitted to several government agencies, with the expectation of having them acted on during the first quarter of 2004. Meanwhile, efforts continued to inform members of the physics community and to inspire them to participate in the WYP.

## PRIZES AND AWARDS

This year the APS honored 48 Prize and Award recipients, for research in all fields of physics, as well as for contributions to physics internationally, for public service, and for communicating physics to a broader audience. Eighteen of these received their Prize or Award at the March meeting, fifteen at the April meeting, and the remaining fifteen at meetings of individual divisions or topical groups. Several individual units also presented awards for the best PhD dissertations in particular areas of research. In addition, 215 Fellows were elected by Council at its November 2003 meeting.

In November, Council approved the Sakharov Prize “to recognize outstanding leadership and/or achievements of scientists in upholding human rights.” Council also approved a new award for Excellence in Education, described above in the Education and Outreach section. The first recipients of each will be chosen once sufficient funds for their endowment have been raised.

The new Advisory Committee on Prizes and Awards met for the first time in 2003, and discussed several policy questions, helped resolve some individual cases of potential conflict of interest, and began its task of reviewing the APS portfolio of Prizes and Awards.

## FINANCES

### DECEMBER 31, 2003

The accompanying two tables and charts summarize the financial operations of the Society as of December 31, 2003. The financial position of the Society on December 31 is summarized for 2002 and 2003 in the STATEMENT OF FINANCIAL POSITION. The financial activities of the various components of the Society are summarized in the STATEMENT OF ACTIVITIES. The 2003 numbers cover the 12 months from January 1, 2003 to December 31, 2003.

A different presentation of the financial activities of the Society is through the accompanying bar chart covering the FY03 OPERATING REVENUE AND EXPENSES and a pie chart of the STATEMENT OF ACTIVITIES FY03 showing the distribution of revenue and expenses between different Society activities.

At the end of the fiscal year 2003, the total assets of the American Physical Society were \$93.6M, up from \$77.5M a year before. The Society's liabilities were \$28.8M, up from \$25.6M the previous year. Net assets at the end of fiscal year 2003 were \$64.8M compared with \$52.0M at the end of 2002. Net assets include \$7.2M in restricted net assets and \$57.5M in unrestricted net assets. The restricted net assets are monies intended for prizes and

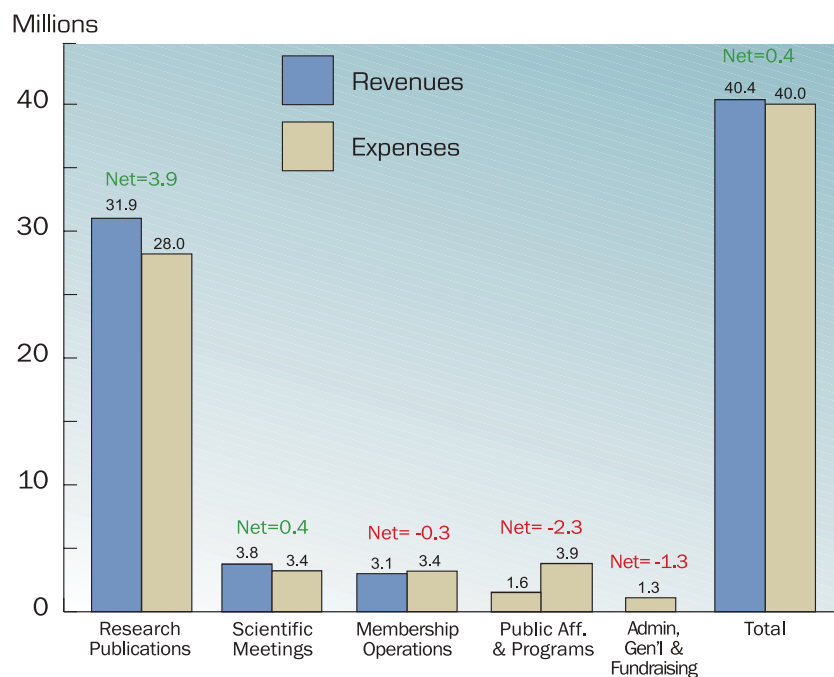
# FINANCES

awards and for the programs of the current capital campaign. The unrestricted net assets are the Society's reserves, which may be used for any of the operations of the Society. The Society's reserves are primarily invested in equities and fixed income issues to provide income to the Society. During 2003 these investments had a net gain of \$11.3M reflecting the significant recovery of the stock market during this period. Over the long run, a portion of the income from investments augments contributions from members to support the Society's programs, while the remaining portion of this income is reinvested to allow reserves to grow with inflation.

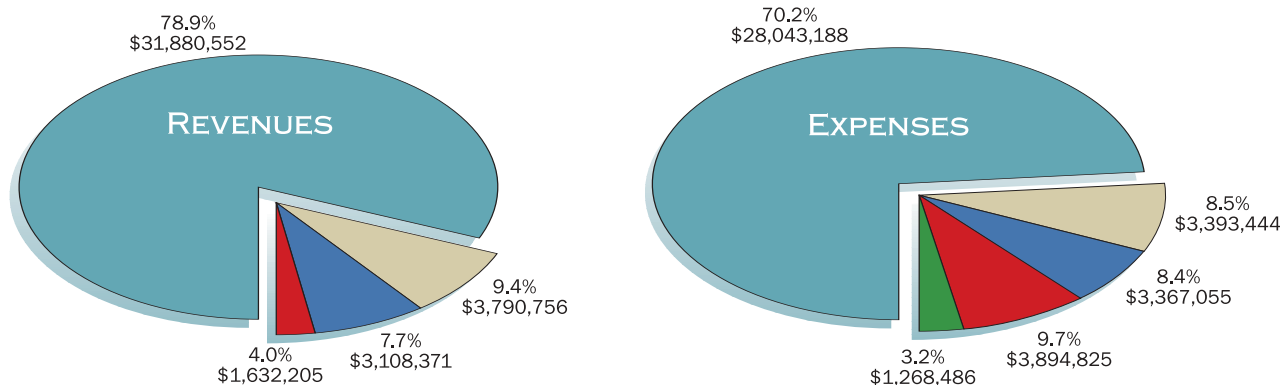
A Business Continuity Plan (BCP) is in place for both the College Park/Washington office and the Ridge office. The purpose of the BCP is to provide an action plan in the event of a disruption of normal operations because of

natural or manmade events. The BCP includes contact names, checklists of orderly procedures and plans for off-site operations if necessary. The BCP is updated and reported on to the audit committee on an annual basis.

## FY03 OPERATING REVENUE & EXPENSES



## STATEMENT OF ACTIVITIES FY03



- Research Publications
- Scientific Meetings
- Admin, Gen'l & Fundraising
- Membership Operations
- Public Aff. & Prog

# FINANCES

## STATEMENT OF FINANCIAL POSITION

AS OF DECEMBER 31, 2003 AND 2002

ASSETS	2003	2002
Cash and cash equivalents	\$ 16,700,301	\$ 10,898,562
Investments, at fair value	67,634,145	56,755,703
Accounts receivable:		
American Institute of Physics	2,171,637	3,216,438
Other, net of allowance for doubtful accounts of \$222,000	912,409	654,148
Pledges receivable, net	722,662	725,860
Prepaid expenses and other assets	545,362	391,523
Land, building and equipment, net	4,519,587	4,497,096
Beneficial interest in perpetual trust	403,725	389,339
Total assets	\$ 93,609,828	\$ 77,528,669
<b>LIABILITIES AND NET ASSETS</b>		
Liabilities:		
Accounts payable	\$ 1,311,989	\$ 1,249,398
Deferred revenues:		
Publications	18,958,651	16,757,706
Membership dues	2,264,485	2,244,447
Other	123,377	215,216
Liability for post-retirement medical benefits	6,138,436	5,089,554
Total liabilities	28,796,938	25,556,321
Net Assets:		
Unrestricted	57,574,176	45,817,617
Temporarily restricted	6,762,702	5,710,999
Permanently restricted	476,012	443,732
Total net assets	64,812,890	51,972,348
Total liabilities and net assets	\$ 93,609,828	\$ 77,528,669

# FINANCES

## STATEMENTS OF ACTIVITIES

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2003

### CHANGES IN UNRESTRICTED NET ASSETS:

**Revenues:**

Research publications	\$ 31,880,552
Scientific meetings	3,790,756
Membership operations	3,108,371
Public affairs and programs	1,288,472
Net assets released from restrictions	343,733
	<hr/>
	40,411,884

**Expenses:**

Research publications	28,043,188
Scientific meetings	3,393,444
Membership operations	3,367,055
Public affairs and programs	3,551,092
Fundraising	365,245
General and administrative	903,241
Prizes and related costs	343,733
	<hr/>
	39,966,998

Income from Operations 

---

 444,886

Income from investments 1,531,186

Net Unrealized and realized gains on long term  
investments 

---

 9,780,487

---

 11,311,673

Increase in unrestricted net assets 

---

 11,756,559

### CHANGES IN TEMPORARILY RESTRICTED NET ASSETS:

Contributions	992,373
Income from investments	403,063
Net assets released from restrictions	(343,733)
	<hr/>
Increase in temporarily restricted net assets	1,051,703

### CHANGES IN PERMANENTLY RESTRICTED NET ASSETS:

Contributions	<hr/> 32,280
Increase in permanently restricted net assets	<hr/> 32,280

Increase in net assets	12,840,542
Net assets at beginning of year	<hr/> 51,972,348
Net assets at end of year	<hr/> \$ 64,812,890

# APS CONTRIBUTORS

## CONTRIBUTIONS AND GIFTS TO APS

APS is fortunate to benefit from generous support from corporations, governmental agencies, national laboratories, foundations and individuals for its programs. These programs include education and outreach initiatives, international affairs programs, public information efforts, and funds for prizes and awards. During 2003, an impressive number of APS members provided an annual gift in conjunction with their membership renewal or at year end, with over \$270,000 having been contributed. In addition, the 21<sup>st</sup> Century Campaign, now in its leadership gift phase, benefitted from major gifts from corporations, foundations and individuals and has raised \$1.6 million to date. We are pleased to provide special recognition to major donors of the Society by including their names in this annual report.

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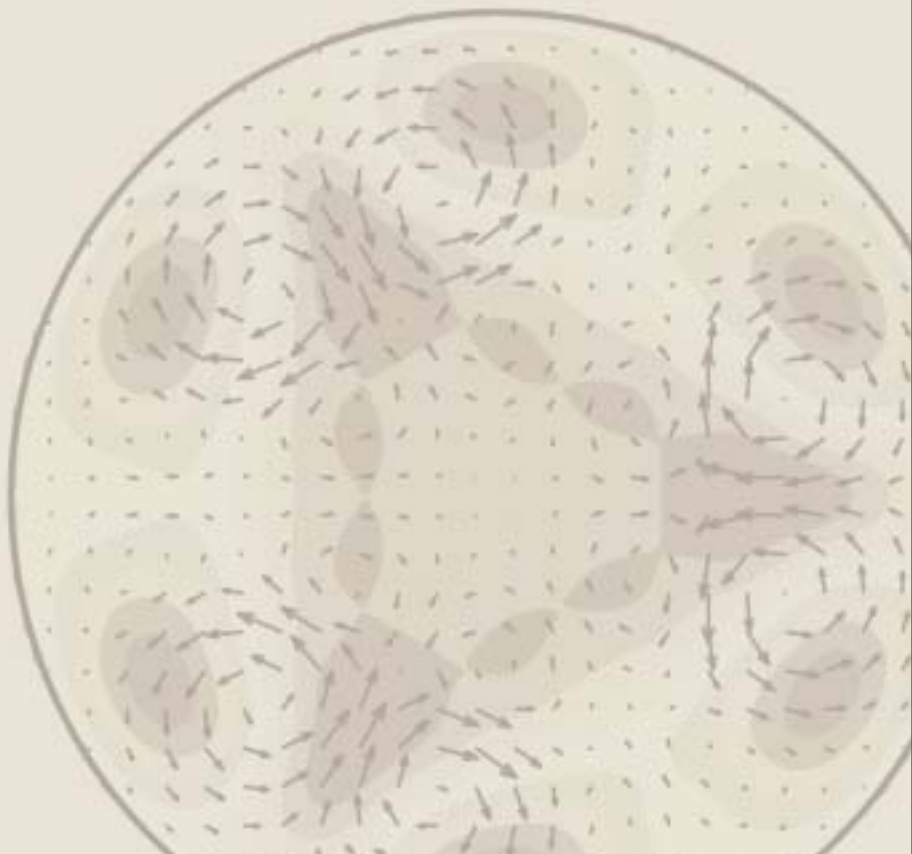
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