

Physics Computing News: Fall 1993

Newsletter of the Division of Computational Physics

Contents:

1. News Bytes
2. Prizes & Awards
3. Fellowship Program
4. Journals & Publications
5. Meetings Announcements
6. Roster of Executive Committee

Questions regarding the items in this newsletter or suggestions for future issues of *Physics Computing News* should be directed to C. Richard DeVore, Newsletter Editor. His address is given in the Roster on page 6.

NEWS BYTES

Pittsburgh Supercomputing Center Receives Computerworld Smithsonian Award

The Pittsburgh Supercomputing Center (PSC) won the 1993 Computerworld Smithsonian Award for science. The award, given for uses of information technology that benefit society, recognizes efforts to bring high-performance computing to bear on research that improves the quality of human life. It also recognizes PSC's role in fostering an intellectual environment that would catalyze fruitful interdisciplinary collaborations.

The research cited was conducted by Carnegie Mellon University physicist Robert Swendsen and colleagues John Rosenberg, a University of Pittsburgh biologist, and Peter Kollman, a University of California at San Francisco chemist. They simulated the interaction between DNA and the enzyme Eco RI endonuclease. The work provided new understanding of how proteins attach to segments of DNA, a fundamental biological process that has direct implications for human health and disease.

As a winner of the award, PSC will be included in a permanent exhibit in the Smithsonian Institution's National Museum of American History, *The Information Age: People, Information, and Technology*. The annual Computerworld Smithsonian Award is given in ten categories, which in addition to science include finance, government, medicine, the arts, and transportation.

PRIZES & AWARDS

1993 Aneesur Rahman Prize Winner: Kenneth G. Wilson

Kenneth G. Wilson, the Hazel C. Youngberg Trustees Distinguished Professor of Physics at The Ohio State University, has been selected as the first recipient of the Aneesur Rahman Prize. Established in 1992 by the IBM Corporation, the prize is intended to recognize and encourage outstanding achievement in computational physics research. Professor Wilson was honored at the Physics Computing '93 conference, sponsored by our division and held in Albuquerque, New Mexico this past June.

His citation reads, “For his pioneering efforts on behalf of the field of computational physics, and for the invention of lattice gauge theory which established the framework for lattice field theory.” Professor Wilson is best known for his seminal formulation of lattice gauge theory, which has since become a major field of computational physics. His subsequent work in quantum chemistry and on light-cone field theory have proven equally significant and influential. He received the Nobel Prize in Physics in 1982 for discoveries in the theory of phase transitions. More recently he has devoted his efforts to the development of a new computer language (Gibbs), which seeks to make the scientific logic of programs more transparent. In his Rahman Prize Address at the conference, he described his work on improving science education in the schools.

Professor Wilson received his Ph.D. from the California Institute of Technology in 1961. He joined the faculty of Cornell University in 1963, where he eventually held the James A. Weeks Chair in Physical Sciences. He also served in 1985 as the director of Cornell’s Center for Theory and Simulation in Science in Engineering, one of the NSF’s five supercomputing centers. He moved to The Ohio State University in 1988.

– *APS News*

FELLOWSHIP PROGRAM

Based on our present membership census, our Division is eligible each year to have approximately 8 Fellows named who are associated with Computational Physics. The APS Council makes the final selections, generally closely following the recommendations of the divisional Fellowship Committees.

A nomination form appears on pp. 27–28 of the January 1993 issue of *APS News*, or can be requested from the APS office at (212) 682-7341. Fellowship in the American Physical Society is a great honor. In accordance with the APS Constitution, “there shall be elected to Fellowship only such Members who have contributed to the advancement of physics by independent, original research or who have rendered some other special service to the cause of the sciences.” All division members are invited to nominate deserving colleagues as potential Fellows of the APS. The deadline for nominations to fellowship in 1994 is February 15, 1994.

JOURNALS & PUBLICATIONS

Computational Physics Section of Physical Review E: Call for Papers

Physical Review E, known as PRA15 before January 1993, welcomes contributions to its new Section E-10 on computational physics. Appropriate papers for this section are those that describe a substantial improvement in general computational methods that address significant physics problems. These papers are intended to reach a wider audience of physicists than that reached by specialized journals. Specific listings of programs,

etc., should be reserved for supplementary material that would not appear in the published article. Cross-disciplinary papers which emphasize the applications of computational techniques should appear in other sections of Physical Review A, B, C, D, or E.

We also call your attention to our short paper sections. Rapid Communications are intended for new results which deserve accelerated publication. Papers submitted to this section are given priority in editorial processing and production to minimize the time between receipt and publication. Brief Reports are accounts of completed research which do not warrant regular articles or the priority handling given to Rapid Communications (for example, addenda are published as Brief Reports). We emphasize, however, that all sections of Physical Review are judged by the same scientific standards.

We will, of course, be happy to answer specific questions concerning the appropriateness of particular articles. Please feel free to contact any of us by mail at Ridge, or by telephone.

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Other sections of the interdisciplinary journal PRE are devoted to general methods of statistical physics, kinetic and transport theory, thermal physics and fluid dynamics, complex fluids, diffusion-limited aggregation and dendritic growth, plasma physics, beam physics, classical physics, and biological physics.

– Gerald Hedstrom, *PRE*

Computers in Physics: Fifth Annual Educational Software Contest

Computers in Physics (CIP) is continuing its sponsorship of an annual contest for the best in educational physics software. Over the past four years the winners have included inventive and creative educators and researchers from institutions of all sizes and from all regions of the country. The scope of the contest is broad, with entries from such areas as simulations, demonstrations, microprocessor-based laboratories, and utilities. Starting this past year, we have included a prize for the best undergraduate student entry; this software is not limited to pedagogy and may be associated, for example, with a research project.

CIP is seeking submissions for the next contest. The deadline for submitting software is May 31, 1994. Write to Computers in Physics, 500 Sunnyside Boulevard, Woodbury, NY 11797 for application materials.

– Harvey Gould, *CIP*

MEETING ANNOUNCEMENTS

Annual Division Meeting Approved

At the Physics Computing '93 meeting, the Executive Committee met and voted to hold annual meetings of the Division beginning in 1995. It was felt that building a strong tradition of broadly attended conferences in our discipline should be a high priority of our division. Holding those conferences on an annual basis was deemed the best way to insure continuity and institutional memory among the organizers, and ever improving formats and content for the attendees. In certain years, as in 1993, the annual meeting will be international in scope, with colleagues in the European Physical Society (EPS) involved in the planning and invited to attend the conference. A similar relationship with colleagues in the Pacific Rim countries is being discussed and developed.

In 1994, the divisional meeting will coincide with the April meeting of the APS in Washington, DC, as it has in previous even-numbered years. A site-selection committee presently is deliberating and reviewing proposals for the 1995 meeting. That conference and its successors are scheduled to be held during the first half of June.

Physics Computing '94: Call for Papers

Physics Computing (PC) '94 will be held from Monday, August 22 through Friday, August 26 at Palazzo dei Congressi, Lugano, Switzerland.

PC '94 will give a detailed overview on the newest research results and developments in computational methodology for academia and industry, including invited papers, contributed papers, poster sessions, tutorials and vendor exhibitions. The purpose of the conference is to bring together researchers interested in innovative approaches in computational physics. Special emphasis will be given to algorithmic and high-performance computer implementation issues. Tutorial sessions organized by leaders in their respective fields will be held on the first conference day.

Authors wanting to contribute papers or posters are invited to request a submission form from the conference secretariat (address below) and to return it as soon as possible, specifying the title and the field of their paper or poster and their address. The deadline for the submission of contributed papers is February 28, 1994. Papers will be peer reviewed by experts and the accepted ones will be included for oral presentation and for publication in the Conference Proceedings. Contributed papers will be limited to four pages. Formatting details will follow with the second announcement.

The registration fee, not including tutorials and accommodations, will be 370 Swiss francs for individual members of the EPS and affiliated societies, and 400 francs for nonmembers. A limited number of scholarships will be available for students. More detailed information concerning scholarships can be obtained after 1 October 1993 through the Conference Secretariat. Registration and hotel reservation forms will be sent together with the second bulletin.

PC '94 is jointly organized by the Centro Svizzero di Calcolo Scientifico (CSCS), Manno, Switzerland, belonging to ETHZ (Swiss Federal Institute of Technology Zurich), the EPS Interdisciplinary Group on Computational Physics, and by the American Physical Society Division of Computational Physics.

For further information please contact the Conference Secretariat at the following address:

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– Marco Tomassini, *EPS*

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