WE HEAR THAT

AAS Divisions Honor Van Allen and Others

Each year several divisions of the American Astronomical Society recognize individuals who have made noteworthy achievements within their respective fields. The following divisional prizes were presented during 1994.

At its annual meeting in Bethesda, Maryland, in early November, the society's division for planetary sciences awarded the Gerard P. Kuiper Prize to **James Van Allen,** a professor of physics at the University of Iowa. Van Allen was recognized for "his many contributions to the field of planetary science, both through his investigations of planetary magnetospheres and through his advocacy of planetary exploration."

Karen J. Meech, an associate astronomer at the University of Hawaii, received the division's Harold C. Urey Prize. She was cited for "her outstanding observational studies of comets," including an extensive survey of very distant comets that revealed that "comets are active at much larger heliocentric distances than previously thought." Also honored at the meeting was **Joseph A. Burns,** who received the Harold Masursky Award for "his many activities on behalf of planetary science," including serving as editor of the journal *Icarus*. Burns is the Irving Porter Church Professor of Engineering and a professor of astronomy at Cornell.

The 1994 recipient of the AAS division on dynamical astronomy's Dirk Brouwer Award is **Christopher Hunter** of the mathematics department at Florida State University. He was cited for having had a "major impact on our understanding of galactic dynamics and the dynamical behavior of stellar systems."

In addition to the divisional prizes, AAS awarded two Henri Chretien International Research Grants during 1994. The first went to **Pierre Bergeron** of the University of Montreal, who with colleagues has undertaken an extensive photometric and spectroscopic survey of more than 100 cool white dwarf stars. The second grant went to **Scott Horner** of Penn State, who has been using asteroseismology—a technique for probing the interiors of stars—to better understand stellar structure and evolution.

Press Tops List of AAAS Awardees

During its annual meeting in Atlanta this month the American Association for the Advancement of Science will present awards in a variety of fields. Among the recipients is **Frank Press,** Cecil and Ida Green Senior Fellow at the Carnegie Institution of Washington, DC. Press will receive the 1994 AAAS Philip Hauge Abelson Prize for "the outstanding impact his scientific work has had on the development of modern geophysics and for the influence of his personal leadership in national science planning and administration."

Theodore Postol, professor of science, technology and national security policy at MIT, will receive the 1994 AAAS Hilliard Roderick Prize in Science, Arms Control and International Security. The citation states that Postol "has produced important technical analyses related to a number of controversial issues, including strategic and tactical missile defenses and potential civilian casualties from nuclear counterforce attack."

The 1994 AAAS Mentor Award will go to **Joseph S. Francisco,** professor of chemistry and science at Wayne State University, Detroit, Michigan, for "his remarkable dedication to mentoring PhD students in chemistry and chemical engineering."

The 1993–94 AAAS Newcomb Cleveland Prize for the best article or report in *Science* will go to the authors of two papers: **Michael R. Crommie, Chris P. Lutz** and **Donald M. Eigler,** all of the IBM Almaden Research Center in San Jose, California, for their article "Confinement of Electrons to Quantum Corrals on a Metal Surface"; and **Jerome Faist, Federico Capasso, Deborah L. Sivco, Carlo Sirtori, Albert L. Hutchinson** and **Alfred Y. Cho,** all of AT&T Bell Laboratories in Murray Hill, New Jersey, for their report "Quantum Cascade Laser."

OBITUARIES

Arkady Aronov

Arkady Aronov, professor of physics at the Weizmann Institute of Sciences in Israel, head of the theory department at the A. F. Ioffe Physico-Technical Institute in Saint Petersburg, Russia, and one of the brightest theoretical condensed matter physicists of his generation, died of a heart attack on 13 November in Rehovot, Israel.

Arkady was born in Leningrad on 26 July 1939 and obtained his first diploma in electronic engineering at the Leningrad Electro-Technical Institute in 1962. With the help of Grigory Pikus, Arkady entered the graduate school associated with the Semiconductor Institute of the Academy of Sciences of the USSR in 1963.

The first papers by Aronov and Pikus discussed the optics of semiconductors in crossed electric and magnetic fields. The practical consequence of the theory they developed was an optical method for measuring the effective masses of electrons and holes. Based on this work and studies of interband tunneling, Arkady earned his PhD in physics in 1966.

After earning his PhD, Arkady worked at the Semiconductor Institute, which later merged with the Ioffe Institute. Arkady worked at the B. P. Konstantinov Institute for Nuclear Physics from 1976 to 1990 and then returned to the Ioffe Institute as head of the theory department. In May 1994 Arkady accepted a professorship at the Weizmann Institute. He had recently been named a member of the associated staff at the International Centre for Theoretical Physics in Trieste, Italy.

From the beginning Arkady viewed theoretical physics as an interconnected subject, and throughout his career he achieved important results in very different areas of condensed matter theory.

Aronov and Alexey Ioselevich constructed a semiclassical theory of optics in semiconductors in a strong electric field that took into account a broad set of exciton effects. Arkady also contributed to the theory of tunnel luminescence and to the theory of inelastic light scattering in a crystal without an inversion center. Together with Gennady Bir and Pikus, Arkady in 1975 suggested a new mechanism for electron spin relaxation due to interaction with itinerant holes. This theory pointed out the important role of the interplay between disorder and interactions in quantum systems. One more paper written in 1976 predicted Fermi-liquid-type spin waves in a spin-polarized Boltzmann

gas, which were later discovered experimentally by Laurent Levi.

With Vadim Gurevich, Aronov wrote papers in 1972–74 on the Boltzmann equation for Bardeen–Cooper–Schrieffer quasiparticles in clean superconductors that became the basis for further development of the BCS theory. Among Arkady's own developments in this period one can name the analysis of the conditions of stability of nonequilibrium quasiparticle distributions and the thermoelectric effect in superconductors. Aronov and Boris Spivak in 1975–80 studied heating and energy relaxation in superconductors, a crucial aspect of all applications of superconducting devices.

Perhaps Arkady's most significant impact on condensed matter theory was his study of disordered conductors at low temperatures. He was the first to recognize the importance of electron diffusive motion on electron–electron interaction. His theory in this area, together with the theory of single-electron conductance in the a weak random potential, led to an entire new field, usually called weak localization. Arkady contributed also to single-electron weak localization, working on the theory of anomalous magnetoresistance. This work culminated in the prediction of the Aharonov–Bohm conductance oscillations in a hollow cylinder as a function of the magnetic flux through it. The experimental discovery of this effect by Yury V. Sharvin and Dmitry Yu. Sharvin became one of the major successes of weak-localization theory.

We are both proud of the paper we wrote with Arkady on the rate of phase relaxation of electrons in dirty conductors; that paper both introduced the concept of phase relaxation and studied it in detail. Arkady contributed an analysis of the enhancement of the thermo-power and spin-dependent effects in small samples.

Arkady Aronov's style unified a grand vision, a high level of theoretical performance and sparkling physical insight. The energy and emotion that Arkady invested in his research made collaboration with him simultaneously instructive and exciting.

Arkady was a charming person, acquainted with hundreds of people, every one of whom considered himself Arkady's closest friend. Physics occupied all of Arkady's time, and new results or ideas could make him absolutely happy. Arkady suffered greatly from life-threatening health problems for the last 15 years. Nevertheless his sudden death came unexpectedly and left a deep feeling of

loss in the hearts of all those who knew and loved him.

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Carlos Aragone

Carlos Aragone, professor of physics at the Universidad Simón Bolívar, in Caracas, Venezuela, passed away on 2 October. He was 57 years old.

Carlos was born in Montevideo, Uruguay, in 1937. He studied at the Universidad de la República in Montevideo for three years before leaving for Italy, and he received his Laurea degree in mathematical science under Carlo Cattaneo at the University of Rome in 1967, working on Hamiltonian methods in general relativity.

He returned to Montevideo in 1968. In collaboration with Luis Saravia he took part in the modernization of the old Institute of Physics at the university and the formation of an active research group in field theory and relativity. He was instrumental in the creation of a regional committee on gravitational physics, the COLARG, and a periodic Latin American meeting on gravity, the SILARG. The first such meeting was held in Montevideo in 1971, and the SILARG has since met every three years. Carlos also participated actively in the consolidation of the Latin American Center for Physics, which supports collaborative activities of researchers in Latin America and is the main international organization of physics in that region. He was the president of its board of directors from 1976 to 1985.

In 1971 Carlos moved to Venezuela to become a member of the recently created Universidad Simón Bolívar. There he helped develop one of the most active physics departments in research in Latin America. He became a full professor at the university in 1976. He actively participated in the Venezualan Physical Society and in the creation of a society for the promotion of research—the Galilean Society. He also was director of the Astronomical Research Center at Mérida, Venezuela, from 1982 to 1985.

Carlos was one of the pioneers of the "light front" approach to gauge theories. His research also led him to consider higher spin theories, supergravity and general relativity. He made important contributions in theoretical optics, where he introduced the notion of minimal-uncertainty