

ries and talk about the fruitful and joyful time they had spent together. The discussions, augmented by contributions from Dugas and Seitz, are reported in the Baruch and Bantigny article.

The agility of Pierre's mind was amazing: He had a vast imagination and was bursting with new ideas—some of them way out there, but most of them profound. Colleagues may remember seeing Bell Labs researchers in Murray Hill, New Jersey, waiting in line for Pierre's advice! He also was convivial and outspoken. In the lab, we viewed him more as a pal than as a boss—he was only four years older than most of us—and we admired him. Our group's Saturday morning meetings with Pierre in a nearby bistro in the Latin Quarter were famous among the semiconductor community. There, between pinball games, we discussed the progress of our work, and new ideas emerged.

Pierre was unselfish and generous, leaving to his coworkers the benefit of his own ideas. As a result, his published work is scanty. Many of us will remember his endless creativity, enthusiasm, imagination, and humor. But he hated paperwork, even for his own scientific ideas. We pressed him without success to write down the ideas about semiconductor lasers that he had presented orally at the Brussels solid-state electronics conference in 1958, ideas that were well ahead of their time.

Pierre became a member of the National Academy of Sciences in 1974 and a foreign associate of the National Academy of Engineering in 1976. He joined the French Academy of Sciences in 1988.

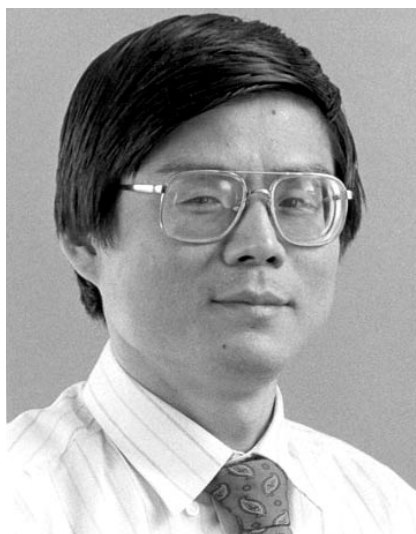
An atypical figure, Pierre was a main contributor to French physics revival during the postwar period. He left a profound imprint on a generation of solid-state scientists. All those who had the fortune of working with him know that they owe him much.

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Daniel Chonghan Hong

Daniel Chonghan Hong, a professor of physics at Lehigh University and the originator of the diffusing void model of granular flow, died of cardiac arrest, after a period of hospitalization, on 6 July 2002 in Hershey,



Daniel Chonghan Hong

Pennsylvania.

Dan was born in Seoul, South Korea, on 3 March 1956. He earned his BS (1979) and MS (1981) degrees in physics from Seoul National University and his PhD in theoretical condensed matter physics from Boston University in 1985. He did postdoctoral work at the Institute for Theoretical Physics (ITP; now the Kavli Institute for Theoretical Physics) at the University of California, Santa Barbara (UCSB), for the next three years and at Emory University from 1987 to 1988. He then joined the faculty at Lehigh.

As a graduate student, Dan worked with H. Eugene Stanley on fractal properties of the percolation backbone, random walks on percolation clusters, and transport in random composites. At the ITP, he turned his attention to pattern formation, which was then just beginning to attract wide interest among statistical physicists. With James Langer and Angelo Barbieri, Dan worked out the theory of microscopic solvability, showing that the Stefan model of solidification does not allow steady-state “needle crystal” solutions unless the surface tension in the model is anisotropic. Dan subsequently investigated several ramifications of microscopic solvability, especially for the Saffman–Taylor problem.

While working on both pattern formation and polymer physics at Lehigh, Dan added granular flow to his expanding list of interests in nonlinear dynamics. He approached the topic from a dizzying range of perspectives: discrete computer simulations, static stress analyses, thermodynamic analogues, Langevin-, Boltzmann-, and Enskog-equation

approaches, and continuum hydrodynamic formulations. His very first effort in this field was noteworthy: With Hugo Caram, he formulated a simple granular-flow model that focused on the diffusion of voids in the assembly of particles. They published their findings in *Physical Review Letters* in 1991. The diffusing void model is now recognized as an effective theoretical model for treating a broad range of dynamical phenomena in granular media. In his office, Dan prominently displayed a Lucite® chamber containing internal barriers and plastic spheres; the chamber demonstrated some of the model's first predictions.

Dan's range of interests, and his worldwide circle of collaborators and students, continued growing vigorously until his final months. He branched out into fracture and stick-slip failure, traffic flow, and a variety of pattern-formation problems, including surfactant effects in viscous fingering, ripple marks, and washboard roads. His final work, with Stefan Luding (then with the Institute for Computer Applications in Stuttgart, Germany) and Paul Quinn (then at Lehigh), on the behavior of a vibrated bed of dissimilar grains predicted the conditions under which larger grains may sink. This “reverse Brazil nut problem” remains a focus of active investigation worldwide. Dan was pleasantly surprised—and nonplussed—when his paper, with Joseph Both of Lehigh, on controlling the size of popcorn attracted international media attention before its publication in *Physica A* in 2000.

In addition to his technical publications, Dan wrote popular articles on science, philosophy, and religion for the Roman Catholic monthly *Dulsum Nalsum* and several Korean-American publications. He edited the *AKPA Newsletter* for the Association of Korean Physicists in America from 1995 to 1997 and from 1999 to 2000.

Dan's intellectual curiosity and discipline extended beyond physics. A born-again Christian, he had studied Greek to gain a better understanding of the Bible and was planning to study Hebrew as well.

Dan was an innovative and thorough researcher who related his work to everyday phenomena that other people could understand. He had an unusual ability to catch the simple physics behind a complex phenomenon. He was the source of a ceaseless stream of new ideas that few could keep up with, and he pursued those ideas with an energy and intensity that few could match. He had a keen sense of humor and

infectious cheerfulness. We remember him as an invaluable colleague and a wonderful friend.

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Yutaka Uchida

Yutaka Uchida, a leading research worker in solar physics and plasma astrophysics, died suddenly on 17 August 2002. Tragically, he suffered a cerebral hemorrhage just at the conclusion of his closing thanks at his son's wedding ceremony.

Uchida was born on 27 March 1934 in Tokyo. He earned his undergraduate (1958) and graduate (1963) degrees in astronomy at the University of Tokyo, and then received his first professional appointment there. Takeo Hatanaka and Wasaburo Unno jointly supervised his PhD thesis, "The Effect of the Magnetic Field in the Shock Wave Heating Theory of the Solar Corona."

In 1965, Uchida joined the Tokyo Astronomical Observatory as a research assistant, eventually becoming a professor (in 1978). At that time, the observatory was a research unit of the University of Tokyo and was located in the western suburb of Mitaka. He returned to the university in 1988 to become chairman of the department of astronomy, remaining until his statutory retirement in 1994. A second career then ensued at the Science University of Tokyo. There, he established the Frontier Research Center for Computational Science for computer simulations. He also developed tools for general application and for astrophysical plasmas.

Uchida's entire career was marked by extensive collaborations with international colleagues, including M. K. Vainu Bappu, Attilio Ferrari, one of us (Hudson), Boon Chye Low, Don Melrose, Colin Norman, Robert Rosner, Peter Sturrock, and Zdenek Svestka. His readiness to participate in such collaborations made him an ideal project scientist for the *Yohkoh* (Sunbeam) satellite observatory, which, at its launch in 1991, was Japan's most international satellite project. Uchida continued as project scientist into his retirement until the scientific program ended. But in that



Yutaka Uchida

position, he faced a diplomatic problem. In the NASA-sponsored solar physics program in the US, there was the expectation of free data exchange. That system was incompatible with Japan's expectations at that time. Following the satellite's launch, astronomers continued to use it for more than a decade—almost half of a Hale cycle. During those years, Uchida presided over the adoption of a general open data policy for *Yohkoh*. The *Yohkoh* data and software thus became a model for international cooperation. The *Yohkoh* program inspired Japan's current solar observatory project, Solar-B, which is scheduled to be launched in 2006, and Uchida's support of that program was a vital contribution.

One of Uchida's best-known contributions is his theory of global coronal waves as weak fast-mode hydromagnetic shocks. That innovation, which he introduced in 1968, led to an explanation of Moreton waves—that is, chromospheric disturbances with seemingly inexplicable high speeds. Uchida identified them as the skirts of the global coronal waves already known to radio astronomers as the causes of type II bursts. His theory has survived the test of time, and the subject of large-scale waves in the corona is again an active area of research. New types of waves and large-scale oscillations were discovered recently using the Solar and Heliospheric Observatory (SOHO), Transition Region and Coronal Explorer (TRACE), and *Yohkoh* satellites. Uchida's interest was reawakened, but he died before he could share his insights into the nature of these waves and their excitors. It is now generally accepted that solar flares launch blast waves of the Uchida

type and that the process of their formation probably contains vital clues to the nature of flares and coronal mass ejections.

In his later years, Uchida broadened his scientific interests. His move to the Tokyo Astronomical Observatory, where he worked with Tatsuo Takakura and Keizo Kai on gyrosynchrotron physics, had brought him to solar radio astronomy. That work in turn led him to broader applications of plasma theory. His own favorite recent research area had to do with astrophysical jets and the nature of their magnetism. In June 2002, the *Publications of the Astronomical Society of Japan* published an article, which he coauthored, on the helical nature of the jet in 3C 273. Such phenomena have their solar counterparts in the coronal x-ray jets, which also often have helical flow fields. These solar jets were discovered by Yohkoh in 1991. Magnetized plasmas are like bread and butter for solar physicists; Uchida was one of the pioneers of plasma astrophysics in more general applications.

The hospitality of Uchida and his wife was known to many astrophysical visitors to Tokyo. The Uchidas frequently hosted parties in Tokyo and at their summer home. He delighted in discussing scientific problems, often argumentatively, but with insight and humor. He is missed by his colleagues both in Japan and around the world.

Hugh S. Hudson

University of California, Berkeley

Takeo Kosugi

Institute of Space and Astronautical Science

Sagamihara, Japan

Leon Van Speybroeck

Leon Van Speybroeck, a master designer of x-ray telescope mirrors and the telescope scientist for the Chandra X-ray Observatory, died in Newton, Massachusetts, on 25 December 2002, shortly after learning that he had metastatic melanoma.

Leon was born on 27 August 1935 in Wichita, Kansas. He received a BS in 1957 and a PhD in 1965, both in physics, from MIT. His PhD thesis, "Elastic Electron-Deuteron Scattering at High Momentum Transfer," was carried out under the supervision of Henry Kendall and Jerome Friedman. Leon spent two more years at MIT as a research associate.

In 1967, he was hired by American Science and Engineering (AS&E) in Cambridge, Massachusetts, and joined the x-ray astronomy group led by Riccardo Giacconi, who received the 2002