



Leroy L. Chang

the transient Rydberg atom maser, in which a collection of excited atoms emits a superradiant microwave pulse, and the two-photon micromaser, in which atoms in the resonator undergo two-photon transitions. Walther is also known for his studies of resonance fluorescence and of trapped and cooled atoms. Haroche's research has also included work on superfluorescence and quantum beats in spontaneous emission.

Walther earned his doctorate in physics from the University of Heidelberg in 1962. After a year as a postdoc there, he held positions at the University of Hannover, Germany, and at the Joint Institute for Laboratory Astrophysics in Boulder, Colorado. Subsequently he was a professor of physics first at the University of Bonn and then at the University of Cologne. He has been a

Herbert Walther



Serge Haroche

professor of physics at the University of Munich since 1975. Since 1981 he has also been one of the directors of the Max Planck Institute for Quantum Optics.

Haroche earned his doctorate in physics from the Ecole Normale Supérieure in 1971. He then held positions at the Centre National de la Recherche Scientifique and at the Ecole Polytechnique in Paris. He has been on the faculty of the University of Paris VI since 1975 and at the Ecole Normale since 1983.

OBITUARIES

Sadao Oneda

Sadao Oneda, professor of physics at the University of Maryland, died of cancer on 14 August 1992. He was 69. Oneda was internationally known for his contributions to elementary-particle physics.

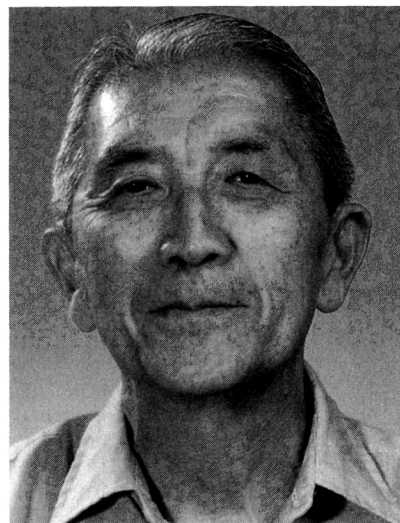
Oneda was an undergraduate student in Japan during World War II. He graduated from Tohoku University in 1946 and joined Kanazawa University in 1950. He received the DSc degree from Nagoya University in 1953, under the sponsorship of Shoichi Sakata. In 1955 Oneda left Japan for the University of Manchester on a three-year fellowship. From 1958 to 1960 he held postdoctoral positions at the Institute for Advanced Study in Princeton, New Jersey, and at the University of Maryland. He returned to Kanazawa University for two years but came back to the US in 1963 to accept a faculty position at the University of Maryland.

Oneda made significant contributions to fundamental physics, espe-

cially to the development of our knowledge of the strong and weak interactions of elementary particles. Oneda and coworkers realized in 1949 the connection between the branching ratio of the decay of pions into electrons and muons and the axial-vector nature of the underlying interaction. Their paper was published in English in Japan a few months before Malvin Ruderman and Robert J. Finkelstein published the same, independently reached, conclusion in the US. Oneda was among the first to recognize in the early 1950s some unusual aspects of unstable particles discovered around that time; that recognition led him to the idea of associated production in 1951. In a sharper formulation of that concept in 1952, Abraham Pais referred to the model of Oneda. This in turn eventually led to the concept of the strangeness quantum number for hadrons, the strongly interacting particles. Oneda also realized that there was a connection between baryon number conservation and gauge transformations of the first kind and published a letter on the subject at roughly the same time that the paper of Eugene Wigner appeared in the *Proceedings of the National Academy of Sciences*. In the late 1950s Oneda and coworkers were already advocating a dynamical origin for the $|\Delta I = \frac{1}{2}|$ rule in the nonleptonic decays of strange particles—an idea that has survived even to this day within the modern framework involving quarks and leptons.

Upon his return to Kanazawa, Oneda and his collaborators proposed the so-called rho-dominance model for describing certain properties of hadrons, independently of similar

Sadao Oneda



WE HEAR THAT

work in the US by Murray Gell-Mann, David Sharp and Timothy Wagner. The interplay between strong and weak interactions became a lifelong interest for Oneda; for the last part of his life he systematically obtained relations between measurable quantities that were not explicitly dependent on specific models for the hadrons. He was able to obtain numerous elegant results from this approach. It is fortunate that he was able, with Yoshio Koide, to complete a book based on this research, *Asymptotic Symmetry and Its Implications in Elementary Particle Physics*, which has just appeared in print. It will remain as a lasting monument of his contribution to the field he loved. In addition, Oneda served as an inspiring mentor for numerous students.

Oneda grew up in prewar Japan and suffered like so many others from the hardship of the war. But he survived and persevered. In coming to live in the US he had to adapt not only to an alien language but also to an alien culture. This he did with considerable grace. Oneda was a sweet, sterling man, kind and warm, totally honest and straightforward in his dealings with others. He is greatly missed by all those who knew him.

JOGESH C. PATI
JOSEPH SUCHER
CHING-HUNG WOO

University of Maryland, College Park

Paul Kirkpatrick

Paul Kirkpatrick, professor emeritus of physics at Stanford University, died in his sleep on 26 December 1992 at the age of 98. A pioneer in the use of x rays for scientific purposes and the earliest practitioner of holography, Kirkpatrick invented the grazing-incidence reflection x-ray microscope.

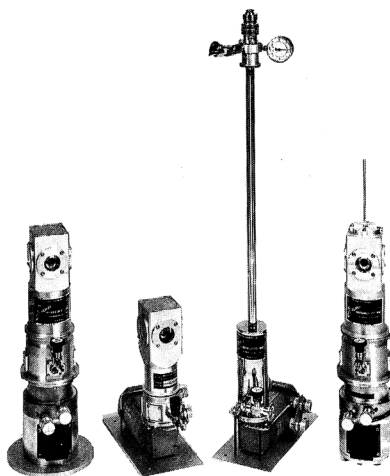
Kirkpatrick was born near Wessington, South Dakota, 21 July 1894, to a family of homesteaders. His parents moved to Southern California, where he later graduated from Occidental College.

He taught physics for two years at a Presbyterian mission in Hangchow, China, and later served in the US Army during World War I. He then went to the University of California, Berkeley, where he received his doctorate in physics in 1923.

His first job after that was at the University of Hawaii, where he was the sole member of the physics department. For lack of research facilities he used old hospital x-ray

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RESEARCH OPPORTUNITIES IN JAPAN

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To provide these opportunities, NSF cooperates with many Japanese organizations, including the Center for Global Partnership, the Science and Technology Agency, the Agency for Industrial Science and Technology, and the Japan Society for the Promotion of Science. More information on potential host institutions under these organizations is available.

Graduate students, postdoctoral researchers and senior investigators are eligible to apply for research stays in Japan ranging from three to 24 months. The next deadline is November 1, 1993. For more details and application materials please see the program announcement, "International Opportunities for Scientists and Engineers," (NSF-93-51).

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