

WE HEAR THAT

tegrity to every paper he wrote. He was known for his generosity in assisting colleagues and both graduate and undergraduate students, and for his kindness to all.

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Masao Kotani

Masao Kotani died on 6 June 1993, bringing to an end a long career in theoretical physics and university administration. He was born in Kyoto on 14 January 1906 and received his BS (1929) and DSc (1943) in physics from the University of Tokyo. In 1929 he began his teaching career as a lecturer at the university, and in 1943 he became a professor of physics there. In 1965 he moved to Osaka University as a professor in the faculty of engineering science. He served as president of the Science University of Tokyo from 1970 to 1982, after which he retired.

Kotani was a pioneer in introducing the developing science of quantum mechanics to Japan, starting in the middle 1930s. From 1938 to 1955, in the precomputer era, he and his students carried out the systematic calculation of tables of integrals for quantum mechanical calculations, which they then applied to numerous atomic and molecular electronic problems, especially state energies. This work included research on electron-atom collisions and the photoionization and recombination of atoms. In the molecular field, their research included the calculation of intermolecular forces from transport phenomena in gases, ligand field theory and the magnetic moments of complex ions. In the 1950s Kotani's early calculations on molecular oxygen set a new standard of precision for energy calculations for the precomputer age and led to work on hemoglobin, which earned him special recognition. He delighted in using purely mathematical and theoretical methods to calculate important properties of complex molecules in the real world.

Kotani had a very private personality and loved hiking alone on remote offshore islands of Japan. He did not easily express personal feelings. Nevertheless, his friends developed deep affection for him, and he

reciprocated in a subtle but definite manner. When my wife and I visited Tokyo a few years ago, he showed great enthusiasm, and we found his company delightful.

Masao Kotani created a whole school of quantum physicists and quantum chemists in Japan, many of whom are prominent in the world of science today. He exerted a powerfully stimulating influence on his scientific colleagues and in his academic endeavors, and he developed deep friendships with those close to him.

MICHAEL KASHA

Florida State University

Tallahassee, Florida

Kristin Ralls

On 30 June 1993 cancer claimed Kristin Sarah Ralls. She was a vital, young experimental scientist of singular promise, skill and insight.

Ralls was born on 21 December 1961. She earned a BS in physics from Stanford University in 1983 and a PhD from Cornell University in 1990. She spent two years as a member of the technical staff at AT&T Bell Laboratories in Murray Hill, New Jersey, before taking a position in the chemical and materials science division at Lawrence Livermore National Laboratory, where she remained until her death.

At Cornell, Ralls's thesis was concerned with examining aspects of electron transport phenomena in ultra-small metallic structures. She developed a novel technique for fabricating metallic nanoconstrictions whose diameters were as small as 3 nanometers. In collaboration with Robert Buhrman and Daniel Ralph, Ralls then used these nanostructures in a variety of experimental investigations.

Upon moving to Lawrence Livermore, Ralls began collaborating with James Eckstein, Ivan Bozovic and colleagues at the Varian Associates to characterize the Josephson properties of epitaxial cuprate thin film tunnel junctions.

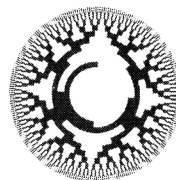
Ralls's life was full of wide-ranging interests. She was always a caring friend and a supportive colleague. During much of her short career she had to deal with a series of personal challenges, including the birth of her second child during her fatal illness. Ralls had a major talent for experimental work and deep physical insight. It is clear to all who knew her that her career, so very well begun, would have blossomed.

ROBERT BUHRMAN

Cornell University

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