

Prabahan Kemal Kabir

Prabahan Kemal Kabir, a well-known theoretical physicist and retired professor at the University of Virginia in Charlottesville, died on 29 August 2004 near Berhampur, India, while swimming in the sea. He was an authority on charge conjugation-parity (CP) and time-reversal invariance (T) violation.



Prabahan Kemal Kabir

Born in Calcutta, India, on 30 June 1933, Kabir was known to his family and friends as "Pasha." His family was prominent in Indian politics: His father was the minister of education in the Nehru government. Kabir finished his undergraduate studies in physics at the University of Delhi at the age of 18 and spent two more years there on his MSc in physics under Ramesh Chandra Majumdar. Kabir came to the US to pursue his doctorate in theoretical physics at Cornell University, where his thesis advisers were Hans Bethe and Edwin Salpeter. His thesis work on the Lamb shift in helium, coauthored by Salpeter, is still widely quoted.

Kabir completed his PhD in 1957 and spent a year at the Institute for Advanced Study in Princeton, New Jersey, followed by a year in the UK at the University of Birmingham with Rudolf Peierls, who was his mentor. Kabir left Birmingham for the University of Calcutta, where he briefly taught nuclear physics before joining the Carnegie Institute of Technology in Pittsburgh, Pennsylvania, as a research physicist and assistant professor of physics. He moved next to CERN, where he was a visiting scientist from 1963 to 1965, until he took a position as a principal scientific officer at the Rutherford High Energy Laboratory in the UK. He spent six years at Rutherford before returning to the US as a professor at the University of Virginia, his base for the re-

mainder of his career while he still traveled extensively to Europe and India. He remained in Charlottesville following his retirement from the university in May 1998.

Kabir's most important work was on symmetry and symmetry violation. He formulated a description of T violation in the kaon system that does not assume CPT invariance. He realized that for T violation, detailed balance has to be broken, so in 1970, he introduced what became known as the Kabir parameter to quantify the imbalance. It would be another 30 years before that parameter was itself measured.

An important idea in field theory was introduced in 1959, thanks to Kabir, Gerald Feinberg, and Steven Weinberg. Their theorem was the first example of the cancellation of a flavor-changing neutral current from muon to electron.

Kabir suggested other new ideas that, like his T violation parameter, may take decades to be observed experimentally. He did not publish many of his ideas because he chose to help others tackle them. Not a follower of trends, Kabir concentrated on symmetries. He was fiercely independent and refused to accept new ideas if he found them at variance with his intuition. For example, he remained skeptical that the graviton would reach a limiting mass of zero discontinuously, as noted by Martinus J. G. Veltman in his 1999 Nobel lecture.

Kabir edited the textbook *Development of Weak Interaction Theory* (Gordon & Breach, 1963), which reprints and translates to English important contributions to the field up to that time, and wrote *The CP Puzzle* (Academic Press, 1968), a still much quoted, detailed account of the neutral kaon system. He was editor of *Physics Letters B* (1978–81) and was on the board of trustees of Universities Research Association Inc (1979–85). Between 1984 and 1990, he chaired the Kilambi Ramavaram Fund Committee of the American Physical Society. The fund supports undergraduate physics teachers from India on short visits to the US.

An exceptional and wonderful person, Kabir was also a warm and generous friend and a stimulating and provocative companion. He is deeply missed by his many friends and collaborators throughout the world.

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Jules Zeiser Klose

Jules Zeiser Klose, an atomic physicist at NIST in Gaithersburg, Maryland, died 8 August 2004 at an elder care center in Annapolis, Maryland, following a lengthy illness and complications related to heart disease and vascular dementia. A member of the plasma spectroscopy section of the National Bureau of Standards in Washington, DC, and, later, when NBS became known as NIST in 1988, a member of the atomic and plasma radiation division, Klose was internationally recognized for using a method called delayed coincidence to measure the lifetimes of atomic and molecular excited states.

Born 7 August 1927 in St. Louis, Missouri, Klose received a BA in physics (1949) from Washington University in St. Louis and an MS in physics (1953) from the University of Rochester in New York. In 1958, he earned his PhD in physics from the Catholic University of America under adviser Malcolm Henderson, with a thesis on "Ultrasonic Dispersion and Absorption in N -Hexane Vapor."



Jules Zeiser Klose

Klose spent the period 1953–61 first as an assistant professor and then later as an associate professor of physics at the US Naval Academy in Annapolis. Concurrently in 1960–61, he was a research associate and lecturer at the University of Michigan, Ann Arbor. In 1961, he joined NBS.

There, the focus of his research was the measurement of atomic lifetimes. He first used electron-beam excitation methods, and then, as lasers were developed, laser-excitation methods that minimized contributions to the atomic level lifetime of electrons cascading from higher energy levels. His