

Subramanian Raman

Subramanian Raman, a senior staff member in the physics division at Oak Ridge National Laboratory (ORNL), died 8 April 2003 at his home in Oak Ridge, Tennessee, of complications following heart surgery.

Born 2 April 1938 in Kollengode, a small town in southwestern India, Raman, often called “Ram” by his friends and colleagues, received his BE in 1959 from the University of Madras. After failing the eye examination required for employment by the India Railway Co, he decided to apply for a Bank of India study-abroad program. Raman came to the US in 1959 and enrolled in the graduate program at Rensselaer Polytechnic Institute, where he received his MS in electrical engineering in 1961. He did his doctoral work at Pennsylvania State University under the supervision of William Pratt. In 1966, he earned his PhD in physics for his thesis “Energy Levels of ^{82}Kr Populated by ^{82}Br Decay.”

In June 1966, Raman joined ORNL to work on the nuclear data project directed by Kay Way. That work provided him insights—into both nuclear structure physics and the power of “horizontal” compilations of properties across a broad range of nuclei—that would guide his research interests throughout his 36-year career at ORNL.

Raman established definitive decay schemes for about 35 radionuclides, most of them for the first time, and discovered two new isotopes, potassium-48 and argon-45. In the early 1970s, he made a series of careful measurements to establish reliably the lowest $\log ft$ value for a β transition of a particular forbidden type. That work resulted in his landmark paper entitled “Rules for Spin Parity Assignments Based on $\log ft$ Values,” published in *Physical Review* in 1973. His interest in β decay led to two additional compilations, one on superallowed $0^+ \rightarrow 0^+$ and isospin-forbidden Fermi transitions and another on mixed Fermi and Gamow-Teller β transitions and isoscalar magnetic moments. He pursued the experimental study of superallowed $0^+ \rightarrow 0^+$ transitions and studied in detail four of the dozen cases that are presently well established.

In the late 1970s, Raman initiated a program of neutron-capture gamma-ray spectroscopy that would significantly influence an entire subfield of nuclear physics. He carried out precise measurements (at both ORNL and Los Alamos) on a large number of nuclei and developed an advanced theory of



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direct capture for interpreting the observations. His work on the 1^+ states in lead-208 was particularly significant. He carried out much of the ORNL work at the Oak Ridge Electron Linear Accelerator, where he was scientific director at the time of his death.

During the 1970s, Raman also undertook the measurement of fission cross sections for the higher actinides. That work led to the establishment of the US-UK actinides program (1979–92) and the Japan-US actinides program (1988 to present); he served as a lead US participant in both programs.

In his last 15 years, Raman became particularly interested in the systematics of quadrupole distortions in nuclei. He initially compiled $B(E2)$ values for all even-even nuclei and then published a series of papers in which he developed the systematics and theory of collective behavior in those nuclei.

Raman's outgoing and friendly demeanor was apparent to hundreds of visitors to the ORNL physics division over the years. He organized the weekly technical seminars and served as de facto host for many of them. His ready camera also served to document the division's social activities.

His friends and colleagues will remember Raman for the breadth of his work in nuclear structure physics and his significant contributions to allied fields. We will remember his enthusiastic enjoyment of life in general and science in particular, his interest and concern for friends and colleagues, and his deep love and devotion to his family.

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