

Alladi Ramakrishnan (1923–2008)

Alladi Ramakrishnan, a distinguished scientist, who was the father of theoretical physics research in Madras and much of South India, passed away on the 8 June 2008, while visiting with his son, Krishnaswamy Alladi (himself an outstanding number theorist) in Florida, USA.

Alladi was born on 9 August 1923 at Madras. His father was the famous lawyer Sir Alladi Krishnaswamy Iyer, who, as a member of the Constituent Assembly, helped draft the Constitution of India. He had his early education in P.S. High School, Madras. He graduated from Presidency College, Madras, with BSc (Hons) degree in physics under the University of Madras in 1943. Ramakrishnan seemed destined, after he passed the law degree with a gold medal, to follow his illustrious father's footsteps. But his fascination with mathematical physics stood in the way. After meeting the eminent scientist Homi J. Bhabha, who was to become the founder of the atomic energy programme in India, Ramakrishnan joined him at the newly started Tata Institute of Fundamental Research in Bombay. Cosmic-ray physics was the centre of attention at the Institute at that time, and Ramakrishnan became deeply involved along with Bhabha, in formulating a theory for the development of cosmic-ray showers as a stochastic process. The important new concept of product densities that he introduced, and the mathematical formalism based on it, made possible the eventual solution of the fluctuation problem of cosmic-ray cascades in all its ramifications. Ramakrishnan moved to Manchester from Bombay to work with M. S. Bartlett, and his work there strengthened his involvement with applications of stochastic theory, in particular, applications of the regeneration point method of Bellmann and Harris to a variety of physical problems. He was awarded the PhD degree of the University of Manchester in 1951.

On returning from England, Ramakrishnan joined the University of Madras in March 1952 as a Reader in the University Department of Physics, which was then in the process of being set up. G. N. Ramachandran, who was with the Indian Institute of Science, Bangalore at that time, had been appointed as Professor and Head of the new department, but could

take up the position only by October 1952. Meanwhile, Ramakrishnan had begun a course of lectures in 'Methods of mathematical physics' which attracted a large number of serious students, and he soon had a band of bright young students working with him. Thus began the flowering of theoretical physics research in Madras, which was soon to gain high reputation all over the world. His visit to



Yukawa Hall, Japan and attendance at the High Energy Physics Conference at Rochester in 1956, followed by a one-year stay as a visiting member at the Institute of Advanced Study in Princeton influenced Ramakrishnan greatly, resulting in the switching of his research interests to high energy physics. He came back with a strong desire to create an institute at Madras on the lines of the Princeton Institute.

Ramakrishnan was promoted as professor in 1959, and posted to the newly created Extension Centre of Madras University in Madurai (which was to become the nucleus of the present Madurai Kamaraj University). With the indulgence of the university, he was able to make frequent visits to Madras, during which he gave lectures (mostly at his spacious ancestral home 'Ekamra Nivas') to the Theoretical Seminar, an informal group of research scholars and MSc students. They were challenged to identify and work on research problems of current interest in a variety of areas of nuclear physics and elementary particle physics, and they rose to the challenge. Many renowned physicists (including Gell-Mann, Glaser, Abdus Salam and Niels Bohr who were, or later became, Nobel Laureates) visited, lectured to, and

inspired this group, impressed by Ramakrishnan's energetic pursuit of his vision of a strong programme of research in these broad areas. Their appreciation played a key role in convincing the then Prime Minister Jawaharlal Nehru and the Tamil Nadu Education Minister, C. Subramaniam of the merits of setting up a new institute of Mathematical Sciences (MatScience), which was started in Madras in 1962 with Ramakrishnan as the Founder-Director. The institute was inaugurated by S. Chandrasekhar. It has since become the leading centre for research in a number of areas of theoretical physics, mathematics and computer science in South India, and stands as a monument to the vision and determination of Alladi Ramakrishnan. However, it must be said that certain facets of his personality led to his becoming estranged from a good section of the scientific community in India over a period of time, and this resulted in his not being given due credit for his own outstanding research contributions and for his role in the development of strong research centres in theoretical physics in South India.

Of the 150 or more of his research papers, those on the theory and applications of stochastic processes were the most influential, bringing him recognition as a brilliant scientist, though he also had numerous publications in elementary particle theory, matrix theory, and the special theory of relativity. His article on probability and stochastic processes in *Handbuch der Physik* (Springer Verlag, 1958, III) provided an insightful treatment of these subjects, and stimulated several applications in diverse fields of physical, biological and other sciences. He is the author of the book *Elementary Particles and Cosmic Rays* (Pergamon Press, 1962), and of *L-matrix Theory or the Grammar of Dirac Matrices* (Tata McGraw Hill, 1972) and *Special Relativity* (East-West Books, Madras). The lectures delivered at MatScience were published by Plenum Press as *Symposia on Theoretical Physics and Mathematics* in ten volumes, edited by Alladi Ramakrishnan.

He guided about 30 research students to their PhD degrees, and influenced the careers of a number of others. Several of his students have become professors in leading universities in India and abroad.

He had an insatiable appetite for international travel, and delivered invited lectures at many universities and institutes around the globe, besides participating in numerous international conferences on a wide spectrum of areas of mathematical physics.

Ramakrishnan was elected Fellow of the Indian Academy of Sciences, Bangalore in 1955. The Tamil Nadu Academy

of Sciences which started functioning in 1976, had him as one of its founder Fellows, and he became its President in 1983. His zeal for attracting young students to serious scientific pursuits never waned, and he accomplished his aim through fascinating lectures delivered in colleges and schools. Ramakrishnan also continued to revel, till the end, in discovering new ways of understanding and

presenting the essence of even seemingly familiar subjects like relativity.

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MEETINGS/SYMPOSIA/SEMINARS

International Symposium on Quality Assurance in Pathology and Disease Diagnosis & Satellite Seminar on Descriptive Gross and Microscopic Veterinary Pathology in Necropsy, Biopsy and Certification Examination

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Edited and published by P. Balaram, Current Science Association, Bangalore 560 080.

Typeset by WINTECS Typesetters (Ph: 2332 7311), Bangalore 560 021 and Printed at Lotus Printers, Bangalore (Ph: 2320 9909)