Professor Calyampudi Radhakrishna Rao

Foreign Member of the Lithuanian Academy of Sciences since 1997

Calyampudi Radhakrishna Rao, known as C R Rao (born 10 September 1920) is an Indian-American mathematician and statistician. He is currently professor emeritus at Pennsylvania State University and Research Professor at the University at Buffalo. Rao has been honoured by numerous colloquia, honorary degrees, and festschrifts and was awarded the US National Medal of Science in 2002. The American Statistical Association has described him as "a living legend" whose work has influenced not just statistics, but has had far reaching implications for fields as varied as economics, genetics, anthropology, geology, national planning, demography, biometry, and medicine. "The Times of India" listed Rao as one of the top 10 Indian scientists of all time. Rao is also a Senior Policy and Statistics advisor for the Indian Heart Association non-profit focused on raising South Asian cardiovascular disease awareness.

Academic career

He received an MSc in mathematics from Andhra University and an MA in statistics from Calcutta University in 1943. He obtained a PhD degree at King's College in Cambridge University in 1948, to which he added a Sc.D. degree, also from Cambridge, in 1965.

Rao first worked at the Indian Statistical Institute and the Anthropological Museum in Cambridge. Later he held several important positions, as the Director of the Indian Statistical Institute, Jawaharlal Nehru Professor and National Professor in India, University Professor at the University of Pittsburgh and Eberly Professor and Chair of Statistics and Director of the Center for Multivariate Analysis at Pennsylvania State University.

Among his best-known discoveries are the Cramér–Rao bound and the Rao–Blackwell theorem both related to the quality of estimators. Other areas he worked in include multivariate analysis, estimation theory, and differential geometry. His other contributions include the Fisher–Rao theorem, Rao distance, and orthogonal arrays. He is the author of 14 books and has published over 400 journal publications.

Rao has received 38 honorary doctoral degrees from universities in 19 countries around the world and numerous awards and medals for his contributions to statistics and science. He is a member of eight National Academies in India, the United Kingdom, the United States, and Italy. President George W. Bush in 2002 honoured him with the National Medal of Science, the highest award in US in the scientific field, as a "prophet of new age" with the citation, "for his pioneering contributions to the foundations of statistical theory and multivariate statistical methodology and their applications, enriching the physical, biological, mathematical, economic and engineering sciences."

He was given the India Science Award in 2010, the highest honour conferred by the government of India in scientific domain. In 2013, he was nominated for the Nobel Peace Prize, along with Miodrag Lovric (Editor) and Shlomo Sawilowsky, for their contribution to the International Encyclopedia of Statistical Science. He was most recently honoured with his 38th honorary doctorate by the Indian Institute of Technology, Kharagpur, on 26 July 2014 for "his contributions to the foundations of modern statistics through the introduction of concepts such as Cramér–Rao inequality, Rao–Blackwellization, Rao distance, Rao measure, and for introducing the idea of orthogonal arrays for the industry to design high-quality products."

He was the President of the International Statistical Institute, Institute of Mathematical Statistics (USA), and the International Biometric Society. He was inducted into the Hall of Fame of India's National Institution for Quality and Reliability (Chennai Branch) for his contribution to industrial statistics and the promotion of quality control programs in industries.

Areas of research contributions

- Estimation theory
- Statistical inference and linear models
- Multivariate analysis
- Combinatorial design
- Orthogonal arrays
- Biometry
- Statistical genetics
- Generalized matrix inverses
- Functional equations

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