

NEWS AND VIEWS

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In memory of Prof. Rohini Godbole by Amol Dighe

Prof. Rohini Godbole, one of the pioneers of collider physics phenomenology in India and a champion of gender equity in STEM, passed away on October 25th, 2024.



Born in Pune, India, in 1952, Rohini Godbole received her early education at the University of Pune, and she

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completed her master's in physics at IIT Bombay (where she later received the Distinguished Alumni Award). She left India in 1974 for her doctoral studies at the University of Stony Brook, USA. She received her Ph.D. in 1979, working with Prof. Jack Smith, one of the pioneers of quantum chromodynamics (QCD), the theory of strong interactions. Returning to India immediately thereafter, she was initially a postdoctoral researcher at Tata Institute of Fundamental Research (TIFR) in Mumbai, and later a faculty member at the University of Mumbai. From 1997 onwards, she worked at the Centre for Theoretical Studies (now Centre for High Energy Physics or CHEP) at the Indian Institute of Science (IISc), Bengaluru.

Prof. Godbole worked on a wide array of topics in high energy physics phenomenology, and her research always focused on theories that could be readily tested at particle colliders. Along with Probir Roy and Sandip Pakvasa, she suggested in 1983 a technique to discover the top quark (which had not been discovered then) at particle colliders: hadronic jets accompanied by isolated high-momentum leptons. This was, in fact, the technique used in 1994 to discover the top quark at Fermilab. She pioneered the study of R-parity violating supersymmetry in India. Along with Manuel Drees, she also showed in 1989 that the high-energy photon, a point particle, gives rise to vacuum polarization, and hence its behavior could be characterized in terms of structure functions just like a particle with a finite size. These ideas have contributed to the designs of new, higher energy colliders. She was also the author of a very well-known textbook on supersymmetry, "Theory and Phenomenology of Sparticles" (2004), co-authored with Manuel Drees and Probir Roy.

Prof. Godbole represented India on many international fora: she was a member of the Commission C11 on Particles and Fields of the International Union of Pure and Applied Physics (IUPAP), the High Energy Physics Advisory Panel of USA, the Advisory Group for the African Strategy for Fundamental and Applied Physics (ASFAP), and the Scientific Council of the Indo-French Centre for the Promotion of Advanced Research (CEFIPRA), among many. She strongly supported the cause of internationalism in science and encouraged young scientists from India to go abroad to hone their skills and return to enrich the Indian scientific scene. In the Indian context, she was a member of several committees, including the Scientific Advisory Committee to the Cabinet of India (SAC-C) and the DAE-DST coordination steering Committee for CERN-India cooperation, to name a few. She also played an active role in initiating and organizing the series of Asia-Europe-Pacific School of High Energy Physics (AEP-SHEP) schools as well as the DST-SERC Schools in Theoretical High Energy Physics in India.

Prof. Godbole was a tireless crusader for encouraging women to seek careers in STEM subjects and for facilitating the participation of more women in science. Together with Ram Ramaswamy, she co-authored an important work "Lilavati's Daughters" (2008), in which the important contributions of Indian women (some of whom were long forgotten) to science were highlighted. It was followed by the e-book "The Girl's Guide to a Life in Science" (2015). The persistent efforts by Prof. Godbole, through her writings and talks, have brought the issue of gender parity on the table of Indian science policy planning.

The contributions of Prof. Godbole to science and her efforts to increase the number of women in science have been recognized with two major honors: Padma Shri, one of the topmost civilian awards by the Government of India (2019) and the Ordre National du Mérite by the French Government (2021), the latter also highlighting her important role in furthering Indo-French scientific ties. In addition to these, she received numerous awards and honors, including the fellowships of all the Indian science academies as well as The World Academy of Sciences, chair professorships, and half a dozen honorary doctorates.

The scientific career of Prof. Godbole spanned 48 years, during which she authored about 350 articles, interviews, reports, conference talks, and other works. Despite her failing health in her last year, Prof. Godbole kept up her pace of research, the last research paper appearing as late as June 2024. Two of her major projects that remained unfinished were the writing of a definitive textbook on the Standard Model, and writing a set of popular science articles in Marathi, her mother tongue in which she had received her early education.

Prof. Rohini Godbole has been an inspiration to generations of high-energy physicists in India, and to many women who have made science their career choice. She will be remembered for her science, her enthusiasm, her passion, and her leadership. The high energy and nuclear physics community, in India and worldwide, mourns the loss of a diminutive figure with a towering personality.

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