

Remembering *Paddy*

Professor Thanu Padmanabhan, known affectionately as Paddy, passed away on September 17, 2021, at the Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India. He had joined the Tata Institute of Fundamental Research, Mumbai, India, as a faculty member in 1980, before moving to IUCAA in 1992, where he stayed till his untimely demise.

In his illustrious career spanning more than four decades, Paddy contributed significantly to a broad spectrum of topics related to astrophysics, cosmology and classical and quantum aspects of gravitation. His research during the early days was aimed at exploring the implications of the quantization of the conformal degree of freedom of spacetime, which led to interesting results such as the avoidance of singularities and the nature of spacetime at short distances. Subsequently, he investigated the manner in which semiclassical gravity can be arrived at from a complete quantum theory and examined its domain of validity. Within semiclassical gravity, he examined the phenomena of vacuum polarization and particle production in different situations, including non-trivial effects that arise during the inflationary epoch in the early universe and around black holes. Simultaneously, he studied the formation of large scale structure in the universe utilizing semi-analytic methods as well extensive numerical simulations. Around the turn of the century, with the advent of precision cosmology, he worked on understanding the observational evidence for the cosmological constant as well as its possible nature and origin. During the last decade-and-a-half, motivated by the thermodynamic nature of gravity, he was developing an approach to the emergent gravity paradigm and exploring its ramifications. Paddy was fascinated by the cosmological constant and, in fact, one of his recent aims was to understand the microscopic nature of the cosmological constant in the context of the emergent gravity paradigm.

An important and distinguishing feature of Paddy's career has been his conscious effort towards writing textbooks aimed at students at different levels. He has also authored many popular science articles and books which have motivated students to pursue research in physics. We believe that his articles, books and lectures will continue to inspire generations of students and researchers to take up the challenge of understanding the laws of nature.

During his career, Paddy received numerous awards both at the national and the international levels, including the INSA Young Scientist Award (in 1984), the Shanti Swarup Bhatnagar Award (in 1996), the Millennium Medal (in 2000), the Al-Khwarizmi International Award (in 2002), the Miegunyah Award of the Melbourne University (in 2004), the Padma Shri (in 2007), the Inaugural Infosys Prize in Physical Sciences (in 2009) and the Third World Academy of Sciences Prize in Physics (in 2011). Very recently, he was conferred the Lifetime Achievement Award (Kerala Sasthra Puraskaram) of the Government of Kerala (in 2021). Notably, he also won the First Prize in the Gravity Essay Contest (in 2008) awarded by the Gravity Research Foundation, USA. He was a Fellow of all the three Science Academies in India as well as the Third World Academy of Sciences.

Paddy was a guiding light for all of his students and postdoctoral fellows who have interacted with him. The light having gone out has filled us with insurmountable grief and sorrow. Paddy was a father figure and a close friend to all of us. His sudden demise leaves a deep void behind. He will remain in our memories forever.

Paddy holds a singular place in our scientific journeys, and in his inimitable, irrepressible and intense manner, made our lives richer and engagement with science deeper in so many ways. He leaves behind an intellectual legacy of the highest calibre. We hope our memories of Paddy will give all of us the strength to carry ourselves through this difficult time, and his energy and enthusiasm will remain with all of us as a constant source of motivation and inspiration.

Jasjeet Bagla, Krishnakanta Bhattacharya, Sourav Bhattacharya, Sumanta Chakraborty, Tirthankar Roy Choudhury, Sunu Engineer, Valerio Faraoni, Jai-Chan Hwang, Harvinder K. Jassal, Nissim Kanekar, Sanved Kolekar, Dawood Kothawala, Kinjalk Lochan, Gaurang Mahajan, Bibhas Ranjan Majhi, Sujoy Modak, Ali Nayeri, Aseem Paranjape, Krishna Mohan Parattu, Karthik Rajeev, Sudipta Sarkar, Sandipan Sengupta, T. R. Seshadri, Shiv Sethi, S. Shankaranarayanan, Suprit Singh, Tejinder Singh, K. Srinivasan, L. Sriramkumar, Urjit A. Yajnik.
