



Tata Institute of Fundamental Research

ASET Series on GMRT



Govind Swarup

From Kalyan to Khodad and beyond : Milestones in the growth of Radio Astronomy at TIFR

Prof. Yashwant Gupta, Centre Director, NCRA-TIFR, Pune



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YouTube link: <https://tinyurl.com/ASET-GMRT>



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Kalyan Radio Telescope



Ooty Radio Telescope

The late Prof. Govind Swarup kicked off activities in radio astronomy at TIFR, way back in 1963, choosing Kalyan (near Bombay) as the location for the first enterprise. Since then, the radio astronomy group at TIFR has grown by leaps and bounds, traversing a memorable journey, peppered with several notable milestones, the latest of which is centred at Khodad (near Pune). In this presentation, we will travel this road, stopping briefly at all the major milestones, with special focus on the recently upgraded GMRT (recently declared as a IEEE Milestone facility) -- a world class low frequency radio astronomy observatory that is used by scientists from all over the globe for cutting edge research. Both technology and science achievements will be highlighted, with glimpses of the challenges faced and (mostly) overcome. We will also look at the road ahead for the group, both in terms of national level possibilities, as well as plans for participation in international projects such as the SKA.



Prof. Yashwant Gupta obtained his M.S. and Ph.D. in Radio Astronomy from the University of California, San Diego in 1990, after completing his Bachelor's degree in Electrical Engineering from IIT Kanpur in 1985. Since 1991, he has been working at the National Centre for Radio Astrophysics (NCRA, Pune) of the

IEEE MILESTONE IN ELECTRICAL ENGINEERING & COMPUTING
Giant Metrewave Radio Telescope (GMRT), 1994

GMRT, consisting of 30 antennas of 45 m diameter each, spanning 25 km near Pune, India, is one of the largest and most sensitive low frequency (110–1460 MHz) radio telescopes in the world. It pioneered new techniques in antenna design, receiver systems, and signal transport over optical fibre. GMRT has produced important discoveries in domains such as pulsars, supernovae, galaxies, quasars, and cosmology, greatly enhancing our understanding of the Universe.

Tata Institute of Fundamental Research where he currently holds the position of Centre Director. His research work is focused mainly in the study of pulsars -- exotic neutron stars -- and the interstellar medium of our Galaxy. In addition, he has significant interest and involvement in instrumentation and signal processing in radio astronomy. Over the years, he has contributed greatly to the building and running of the GMRT Observatory -- a world class instrument built and operated by the NCRA and located about 80 km from Pune. He and his team have recently completed a major upgrade of the GMRT. He also leads India's participation in the Square Kilometre Array (SKA) project -- an international collaborative project to design and build the next generation global radio astronomy facility. Prof Gupta was conferred the Shanti Swarup Bhatnagar Prize in the Physical Sciences, for the year 2007. He has been elected a fellow of the National Academy of Sciences of India and also of the Indian Academy of Sciences.



Giant Meterwave Radio Telescope