

Govind Swarup : The father of radio astronomy in India



With the passing of Prof. Govind Swarup on the evening of September 7, 2020, TIFR and India has lost an iconic figure. A true pioneer, he jump-started the country's efforts in the nascent field of radio astronomy, and built facilities and institutions that have put India on the global stage in the forefront in radio astronomy. He leaves behind a legacy that we can be truly proud of.

Govind Swarup was born in 1929 at Thakurdwara in the then United Provinces. He received an M.Sc. in Physics from the Allahabad University in 1950, where K.S. Krishnan was an important influence, and a Ph.D from the Stanford University in 1961. He joined the Tata Institute of Fundamental Research (TIFR) in 1963, at the invitation of Dr. Homi J. Bhabha. The Radio Astronomy group he founded at TIFR was one of the first of such groups in the world. Swarup and his team quickly began building new facilities, starting with a relatively modest radio telescope at Kalyan near Mumbai, but soon moving on to the much more ambitious Ooty Radio Telescope (ORT) at Udhagamandalam in Tamil Nadu. Prof. Swarup's highly innovative design for the ORT (built during 1965-70) allowed for the construction of a fully steerable, large telescope at a modest cost. The ORT is functional even today, having produced several cutting-edge science results in a wide range of fields from the solar wind, pulsars, the diffuse interstellar medium, extra-galactic radio sources and cosmology.

During 1984-96, Swarup conceived and directed the design and construction of the Giant Metrewave Radio Telescope (GMRT), which consists of 30 large fully steerable antennas, each 45 m diameter, spread out over a 25 km region, near Khodad village, about 80 km from Pune. Once again his innovative design was crucial to allow the construction of a world class telescope at a very modest cost. The GMRT remains one of the most sensitive radio observatories in the world in the frequency range of 130 — 1450 MHz , attracting users from all over the world and producing a slew of cutting-edge science results. It has the pride of place as one of the biggest basic science projects in the country. Swarup became the project director of the GMRT in 1987, and when his group in TIFR became the National Centre for Radio Astrophysics of TIFR, he became its first Centre Director in 1993. He was a strong proponent of building up scientific capacity in the country, and played an important early role in the setting up of the IISERs.

Swarup was a Fellow of the Royal Society (FRS) of London and of all the national science academies in India, and also of The World Academy of Sciences. He had received over 20 national and international awards, including the S.S. Bhatnagar Prize (1972), the *Padma Shri* (1973), the Herschel Medal of the Royal Astronomical Society (2005) and the Grote Reber Medal (2007).

Despite his many achievements, Swarup remained a down-to-earth person, as happy to hold discussions with junior technical staff as with some of the greatest scientists of his time. He was always friendly and approachable, and he continued to share his infectious enthusiasm with young students till the very end. He is survived by his wife Bina, son Vipin, and daughter Anju.