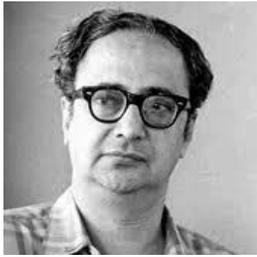


## B.V. Sreekantan : experimentalist, administrator and pioneer



With the passing of Badanaval Venkatasubba Sreekantan on the night of October 27, 2019, TIFR has just lost one of its most iconic pioneers. As the third Director of TIFR, Sreekantan ably steered the ship for 12 years, but his name will be better remembered for his initiation of and long association with the seminal experiments conducted at the Kolar Gold Fields. An experimental physicist *par excellence*, Sreekantan's name will forever be enshrined as one of the discoverers of the 'atmospheric' neutrinos (1965), which are still a subject of intense research after half a century.

Born in 1925 at Nanjangudu village near Mysuru, famous for its 9<sup>th</sup> century temple of Lord Srikanteshvara, Sreekantan was the son of an Ayurvedic practitioner and scholar, from whom he imbibed his early love of books and scientific study. Always a good student, he completed his education at Mysore University with a Masters' in Wireless Communications, and then joined the Indian Institute of Science at Bengaluru for research. From here he was lured away to TIFR in 1948 to work on cosmic rays by its dynamic founder Homi J. Bhabha, who then sent him down the deep Champion Reef gold mine at Kolar to measure the flux of cosmic ray muons. Building his apparatus by hand from war surplus equipment available in the flea market, Sreekantan's work earned him a Ph.D. under Bhabha in 1954. In the same year, Sreekantan was instrumental in setting up two giant cloud chambers at Udhagamandalam (Ooty) to study the cosmic ray flux at that altitude. He then went to the USA to work at the MIT for some time with cosmic ray and space research pioneer Bruno Rossi, where he further honed his experimental skills. Returning to TIFR, Sreekantan became involved in the most important work of his life, which was the search for neutrinos deep underground.

At around 2.2 km down the Champion Reef gold mine, the flux of cosmic ray muons dies down completely due to the layers of rock above it. Muon-flavour neutrinos produced in cosmic ray reactions can, however, easily penetrate this depth of rock (and indeed the entire Earth) and would occasionally produce a muon by a process called inverse beta decay. Detection of muons at such depths would therefore prove the existence of the so-called 'atmospheric' neutrinos — then a mere speculation. As a matter of fact, Sreekantan and his collaborators were successful in finding these, and in 1965, they won the race for this discovery over no less a competitor than Nobel Laureate Frederick Reines, the discoverer of the neutrino itself. In the 1970s, Sreekantan led a revamping of the Kolar experiment to look for proton decay, then predicted by the popular Grand Unified Theories. The experiment ran for more than a decade but failed to find proton decay, as indeed, have all other experiments the world over. Grand Unification still remains an attractive mirage today. The Kolar Experiment also had to be discontinued in 1992, when the completely worked-out gold mines closed down. Its successor experiment — the planned Indian Neutrino Observatory — is still in the making.

In 1975, Sreekantan succeeded the late M.G.K. Menon as Director of TIFR, a position he retained until his retirement in 1987. In 1992, he moved to the National Institute of Advanced Studies (NIAS), where he remained till his death. He held several distinguished positions then and later, including membership of the Atomic Energy Commission, the Planning Commission and vice-president of the Indian Academy of Science. He retained his facilities till the very end and remained in touch with science, especially the setting up of major experimental facilities in India. In his understated way, he was responsible for setting up many of these through his advice and influence. Among other awards, the Government of India honoured him with a *Padma Bhushan* in 1988.

Sreekantan was married to Ratna, a classical singer and radio-artiste, who predeceased him in 2007. The couple are survived by their two sons, Venkatesh, a physicist and Ramesh, a mathematician.