

Saha Institute of Nuclear Physics Alumni Association

Cordially invites you to attend the

**4TH
PROFESSOR MANOJ KUMAR PAL
MEMORIAL LECTURE**

on

**A glimpse into the development
of the heavy-ion
superconducting LINAC booster at TIFR**

by

Professor R. G. Pillay

Former Senior Professor, TIFR and retired Visiting Professor,
IIT Ropar, Punjab

Venue

SINP Auditorium Complex, Main Auditorium
Saha Institute of Nuclear Physics, Kolkata

SEPTEMBER 29, 2023

at 3.00 pm

Organised by

**Saha Institute of Nuclear Physics Alumni Association
(SINPAA)**

SINP, Kolkata



Born: 26 October, 1932; Died: 3 March, 2016

Prof Manoj Kumar Pal was a distinguished nuclear physicist of our times. A profound thinker, he played a pioneering role in the growth of theoretical nuclear physics in India. His main contribution lies in the decisive role played by him in bridging the apparently disparate nuclear models, the collective and the shell model in the Brueckner Bethe Hartree Fock approach. He contributed extensively to the microscopic understanding of the nucleonic behavior in the nucleus and their correlations, core polarization and pairing vibrations in degenerate nuclear systems, finding the fission path from study of the collective potential energy of transitional nuclei and development of the adiabatic time dependent Hartree Fock theory. A brilliant teacher and an exceptional mentor to research students, Prof Pal along with his colleagues built one of the finest schools of theoretical nuclear physics in India in his long academic journey. That is his permanent legacy.

Prof Pal was the Director of the Saha Institute of Nuclear Physics from 1983 till his retirement in 1992. He was a fellow of the Indian National Science Academy, Delhi and fellow of the Indian Academy of Science, Bangalore. He was recipient of M N Saha Gold Medal from the Asiatic Society, Kolkata. He wrote books on both the Special and General Theory of Relativity and an advanced textbook titled *Theory of Nuclear Structure* which is widely used by practitioners of nuclear physics worldwide. An erudite scholar in many disciplines, he published a historical novel titled *Forever Free* and a book entitled *Old Wisdom and New Horizon* on science, religion and philosophy.

A glimpse into the development of the heavy-ion superconducting LINAC booster at TIFR

A B S T R A C T

The first accelerator installed at TIFR, in the late 50's, was the 1 MV Cockcroft-Walton, more popularly known as the Cascade Generator. In addition, e-LINACS were developed by the microwave engineering group at TIFR, which evolved into SAMEER, under the Department of Electronics. In the late 60's this group ventured into radiation therapy and in the 70's into developing e-LINACS for industrial and medical applications. Driven by growing interest and the trends in heavy-ion accelerator based Nuclear Physics, the joint BARC-TIFR project MEHIA was initiated, and the 14MV Pelletron facility was set up in the 80's. The facility was further augmented with the superconducting LINAC, designed and built indigenously, also as a joint BARC-TIFR project. This major development was a first of its kind in the country and very relevant to future upcoming national projects. The superconducting LINAC, a crucial sub-system of the Pelletron LINAC facility (PLF), has completed a little more than 20 years of operations. In this talk I will attempt to introduce some of the major milestones in the development of LINAC and highlight some of the critical technologies developed during the course of implementing the LINAC project.

P R O G R A M M E

Welcome Address

Professor Polash Banerjee

President, SINPAA

Address by Guest of Honour

Professor Gautam Bhattacharya

Director, SINP

M.K. Pal Memorial Lecture

Professor R. G. Pillay

Presentation of Memento

President, SINPAA

Vote of thanks

Professor Kamal Kumar Bardhan

Secretary, SINPAA

ABOUT THE SPEAKER



Professor R.G. Pillay completed his Ph.D. in 1983 from TIFR-Bombay University before doing his post-Doctoral research at SUNY, Stony Brook during 1983-85. He joined the TIFR in 1974 and retired as Senior Professor(I) in the Department of Nuclear and Atomic Physics in 2018. His research interest spanned over Nuclear Physics, Condensed Matter Physics and Material Science, and Accelerator Physics. His expertise covered areas like Accelerator Technology & Development, Mechanical and Electrical Engineering, Vacuum and Cryogenic Technologies, General Electronics, Nuclear Electronics, R.F. Electronics, Control systems, etc.

He set up the first national HPGe-based high-spin spectrometer for nuclear structure studies at the Pelletron accelerator facility where he developed and commissioned the Heavy Ion Superconducting LINAC Booster. He has a Major involvement in TinTin, a national project for the search for neutrino-less double beta decay in ^{124}Sn . He has received numerous awards and recognition that includes M.M. Chugani Memorial award (2016) for excellence in Applied Physics, TIFR Alumni Association Excellence Award (2018) for distinguished contributions to science and to the Institute, DAE-BRNS Raja Ramanna Fellowship (2018-2021), Visiting Professor, IIT Ropar, Punjab (2018-2022) and Member, GANIL Scientific Council (2020-present).

He has held several scientific, technical and administrative responsibilities within TIFR and in DAE and DST. He served as a member of Council, Senate and Board of Studies in national institutes and universities. He has been a Member of the Project Advisory Committee (PAC) of the International Linear Collider (ILC). He has also been a referee and member of advisory committees for national and international journals and conferences.