Pelletron-Linac Facility

BARC-TIFR

The Pelletron-Linac facility, set up as a joint project between NPD-BARC and the Tata Institute of Fundamental Research, has been a major centre for the heavy ion accelerator based research and applications in India. NPD (Nuclear Physics Division) operates, maintains and upgrades the BARC-TIFR Pelletron Accelerator. The Pelletron accelerator has been delivering wide variety of ion beams round-the-clock ever since it's commissioning in December 30, 1988.

The accelerator is mainly used for basic research in the fields of;

- Nuclear Physics
- Atomic Physics
- Condensed matter Physics
- Multidisciplinary areas

Over the years, a number of developmental activities have been initiated resulting in enhancement of overall performance and uptime of the accelerator and also enabling variety of application-oriented programmes including;

- Accelerator based mass spectrometry
- Production of large-scale track-etch membranes
- Low flux Protons irradiation damage studies
- Thin Layer Activation Analysis
- Radioisotopes production
- Secondary neutron production for cross section measurements

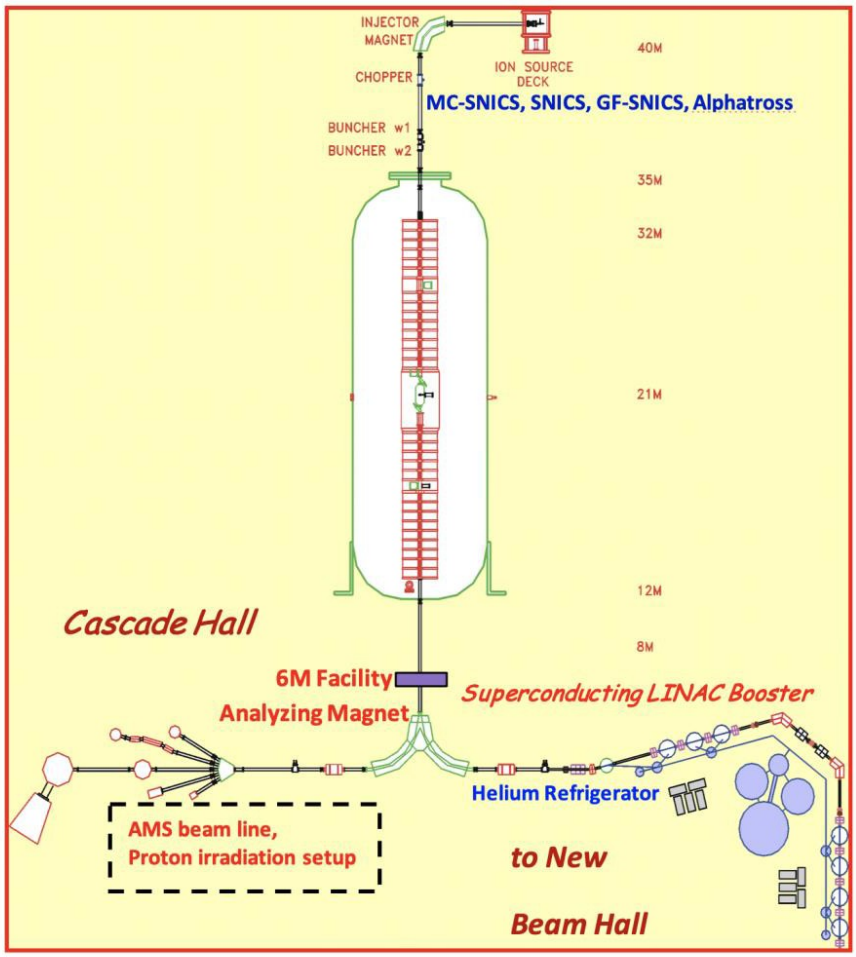
The developmental activities which have been carried out in-house include;

- Replacement of voltage grading based on corona needles by resistances
- Installation of a new terminal potential stabilizer
- Introduction of recirculation terminal gas stripper system
- Indigenous development of a wide range of negative ion species across the periodic table
- Indigenous development of state-of-the-art 36-sample multi-cathode sputter ion source
- Indigenous development of Gas feed-sputter ion source
- A double harmonic drift buncher in the low energy injection path
- Development of FPGA based CAMAC ADC & DAC cards
- Integration of Linux based control & monitoring system

A variety of advanced experimental facilities have been developed to pursue frontier research in nuclear and allied areas. While a majority of the researchers at this facility are from BARC and TIFR, the experimental community includes scientists and students from other research centers and universities within India and abroad.

- More than 125 Ph.D. theses and about 725 publications in international referred journals have resulted from the research activities at the facility. These include about 19 publications in Physical Review Letters.

The accelerator facility complies with the regulatory guidelines and recommendations of the ULSC-PA (Unit Linked Safety Committee-Particle Accelerators), the OPSRC (Operating Plant Safety Committee) and the BSC (BARC Safety Council).



Pelletron-Linac Facility

BARC-TIFR