Recent progress of experimental nuclear physics facilities and research at VECC

Amitava Roy
VECC, Kolkata

The K 130 Cyclotron, the primary machine for carrying out research on experimental nuclear physics at VECC, has been operating successfully with a very high availability of beam time. During last two years the machine has been upgraded with a new indigenously designed 14.4 GHz ECR source for heavy ion acceleration. The RF amplifier system has also been changed to less expensive and available Tetrode based amplifier. An innovative changes in central plug positioning has reduced the ion source change operation from ECR to PIG source to only maximum of 7 days compared to a month long involvement. We have also established that the all-Aluminium trimmer capacitor without Silver electroplating is sufficient for the present operating radio frequencies.

On utilization side, the number of experiments have not only increased significantly, but users from universities and other laboratories are also utilizing the machine after a long time. We have also almost completed the INGA campaign and beam time have been given to almost all the pending proposals.

We are also working hard to correct the magnetic field error of the superconducting cyclotron. In case we are successful, we expect to extract heavy ion beams and VECC should be able to provide heavy ion beams at much higher energy in one year time.

VECC have successfully installed a 30 MeV high current proton cyclotron meant for using for production of radio isotopes for medial purpose. The machine will also be used for irradiation study of nuclear structural materials and ADSS target study. This has also the potential to study thick target for RIB production and may also be used in principle as a primary accelerator for RIB in future.