

Radioactive Ion Beams - covering the spectrum from Cosmos to Hadron Therapy

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Abstract:

Radioactive Ion Beams (RIB) are new tools that are expanding the study of nuclei in the region away from the line of beta-stability. Gathering nuclear structure data for short-lived nuclei that may play an important role in the rapid-neutron and rapid-proton capture reactions of astrophysical interest is another prime motivation for RIB.

Apart from basic research, the technology of RIB accelerators has opened up several potential applications. With RIB, one now has an implantable radio-tracer that can be a probe for depth mapping and can be used even in a chemically incompatible material. A new frontier of hadron therapy may open-up in coming decades, where it may become possible to use RIB for in-situ image guided hadron therapy.

Recognising the potential applications in both basic sciences and technology, the department has funded a programme for indigenous development of a RIB facility at VECC. The room temperature cyclotron of VECC is used as the primary accelerator for RIB facility that is currently accelerating ion beams up to 415 keV/u.

In my talk, I will present an overview of the RIB facility at VECC that has laid the foundation for the proposed next generation facility called ANURIB - a facility for applied and nuclear research using RIB. The current status of preparation for ANURIB will also be discussed.
