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## THE ITHEMBA LABS RARE ION BEAM PROJECT

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The iThemba Laboratory for Accelerator Based Sciences has been operating a K=200 Separated Sector Cyclotron for nuclear physics research, isotope production and hadron therapy since about 1986. The conflicting demands of these diverse application place severe restrictions on research capacity and on the possibility to respond to future demands.

iThemba LABS plans to acquire a high current 70 MeV cyclotron that would serve the needs of radioisotope production, thus allowing the SSC to be used primarily for research. In addition an ISOL based Radioactive-ion beam facility using 66 MeV protons is planned.

The first step towards a RIB facility is to install and test a suitable production target/ion source. We have a collaboration with INFN Legnaro, who will supply the “front-end” which is a copy of the SPES target and ion source. The design can accommodate various target materials. With a uranium-carbide target and 70 MeV protons at  $150 \text{ nA}$  the expected yield is  $2 \times 10^{13}$  fissions/s, however initial tests will be limited to  $50 \text{ nA}$ . The design of low-energy beam lines and end-stations are well advanced and it is expected that low-energy fission fragment beams could be available for experiments after 2018.

Various options for the post-acceleration and experimental facilities are under consideration.