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Latest Developments of The South African Isotope Facility

The latest developments with the Radioactive-Ion Beam project of iThemba LABS, the South African Isotope Facility, SAIF, will be reported [1]. SAIF has two phases, the first of which comprises the Low-Energy Radioactive-Ion Beam (LERIB) project together with the ACE Isotopes (Accelerator Centre for Exotic Isotopes) project. ACE isotopes calls for the installation of a commercial, off-the-shelf 70 MeV cyclotron for radionuclide production. It will remove radionuclide production from the existing Separated Sector Cyclotron (SSC) accelerator, allowing it to be dedicated to research. The partially-funded LERIB project, is an ISOL project that will be capable of producing neutron-rich beams of high-intensity, by using 66 MeV protons from the SSC to fission natural uranium at an initial rate of up to 6×10^{12} f/s. The target/ion-source at the heart of LERIB is a copy of the SPES [2] front-end, in a collaboration between iThemba LABS and INFN-Legnaro, Italy. In future, the power of the primary beam can be increased to give a fission yield of up to 2×10^{13} f/s. The beams from LERIB will be of low-energy, 60 keV - suitable for decay studies and implantation in materials as radioactive probes. Phase 2 of the SAIF project is the Accelerator Centre for Exotic Beams (ACE Beams). It will eventually see the addition of a post-accelerator, likely a LINAC, to take beams from the LERIB to high-energies for research into sub-atomic physics.

[1] R.A. Bark PoS(INPC2016)100

[2] http://www.scholarpedia.org/article/The_LNL_radioactive_beam_facility

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