



**iThemba  
LABS**  
Laboratory for Accelerator  
Based Sciences

iThemba LABS in Cape Town seeks to appoint a

## **SARChI Chair<sup>1</sup>: Nuclear Physics**

The iThemba LABS Low Energy RIB (LERIB) facility, due for commissioning in late 2018, early 2019, is based on the ISOL production of beams of fission fragments. Up to  $10^{13}$  fissions/s will be induced by a  $50 \mu\text{A}$ , 66 MeV proton beam from the K=200 Separated Sector Cyclotron (SSC) of the laboratory. Ions will be extracted using laser ionization in addition to surface and plasma ion-sources. The SSC also provides light and stable heavy-ion beams for nuclear research; it is worth mentioning that its use is no longer restricted to weekends. Other accelerators at iThemba LABS include a 6 MV tandem and 3 MV tandetron. Major equipment includes the AFRODITE array of 14 Compton suppressed Clover detectors and the K600 light-ion spectrometer.

The proposed research chair would be expected to take a leading role in developing research programmes in their fields of expertise within nuclear structure, nuclear reactions and nuclear astrophysics using LERIB and other facilities of the laboratory. Possibilities also exist for a suitable candidate to develop new research programmes around the availability of low-energy exotic beams, such as performing laser spectroscopy with trapped atoms.

The use of alpha emitting isotopes in cancer therapy is rapidly gaining prominence internationally, and concerted efforts are put into finding the most efficient production methods in order to establish a reliable and cost effective supply. iThemba LABS intends investigating production of such radioisotopes. It is envisaged that the research chair will enhance the physics research aspect of this, and other similar projects of interest to isotope production at iThemba LABS.

The requirement for the position would be extensive experience and proven leadership in ISOL techniques and nuclear structure. LERIB is the first step towards the Accelerator Center for Exotic Beams (ACE-Beams) which will offer a longer term perspective for a strong candidate.

The research focus of the proposed research chair is broadly aimed at two aspects of the future project, the South African Isotope Facility (SAIF), which is part of the long range plan of iThemba LABS:

1. To develop capability and initiate and conduct research programmes that would take full advantage of opportunities in the spectroscopy of fission fragments that would become available from the Low Energy Radioactive Ion Beam (LERIB) facility currently planned and under construction.
2. To enhance the nuclear physics research aspects of the R+D on the production of alpha-emitting isotopes.

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<sup>1</sup> The South African Research Chairs Initiative (SARChI) was established in 2006 by the Department of Science and Technology (DST). This Funding Instrument is managed by the National Research Foundation (NRF) through a contractual agreement with DST.

The appointment and remuneration package will be at the level of a South African University professor.

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**Closing date for expression of interest: 17 February 2017**