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## Ion Sources used to produce different beams at iThemba LABS

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**Abstract content &nbsp; (Max 300 words)<br><a href="http://events.saip.org.za/getFile.py/?target="\_blank">Formatting &<br>Special chars</a>**

The particles for acceleration in the cyclotrons of iThemba LABS are produced in different ion sources. For high intensity beam application, an internal Penning Ion Gauge (PIG) source is used. Nuclear spin polarized protons are generated in an atomic beam source. For the production of high charge states heavy ions, a 14.5 GHz Electron Cyclotron Resonance Ion Source (ECRIS4) that was originally built for the Hahn Meitner Institute and a new ECRIS based on the design of the Grenoble Test Source (GTS) are being used. The GTS operates at room temperature and uses two microwave frequencies of 14 GHz and 18 GHz. The two ECRIS deliver highly charged ions of sufficient intensity to be pre-accelerated in the solid-pole injector cyclotron (SPC2) which are then injected into the separated-sector cyclotron to be accelerated to required energy. The principles and the performance of the different ion sources will be discussed.

**Apply to be<br> considered for a student <br> &  award (Yes / No)?**

No

**Level for award<br>& (Hons, MSc, <br> &  PhD, N/A)?**

No

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Yes

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Yes

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