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Beam emittance measurements in the SPC2 injection beamline at iThemba LABS

iThemba LABS provides accelerator and ancillary facilities for research and training in physical, biomedical and material sciences. At the heart of the iThemba LABS accelerator complex is the variable-energy, separated-sector cyclotron. A solid-pole injector cyclotron SPC2 is used for pre-acceleration of light and heavy ions which has overall transmission of approximately 10%. In order to improve transmission, several ideas are currently being investigated
through simulation studies. The success of these studies depends on the knowledge of the emittance from the ion sources. At present, there is no system that measures emittance in the beamline which leads that simulations are performed with estimated values for the beam emittances. This could lead to undesirable results, hence, the accurate measurement of beam emittance is required. This project aims at developing a method that can be used to accurately measure
beam emittance in the injection beamline. In this talk, the progress made thus far will be presented.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

MSc

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