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## Cross section measurements of light ion production using (p,xp) and (p,xn) reactions

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Neutron-rich beams are being developed at iThemba LABS to study nuclear structure away from the stability. This is also the opportunity of deepening our understanding of astrophysical origin of elements. The primary beam is expected to be an intense 70 MeV proton beam. Several techniques using proton induced reactions have been developed to produce exotic nuclei. The interest of using (p,xp) and (p,xn) reactions lies in the fact that proton beams have a large penetrating power and can be produced with high intensity. Some preliminary measurements were performed at iThemba LABS using,  ${}^7\text{Li}$ ,  ${}^9\text{Be}$  and  $\text{natB}$  targets with protons projectiles of energy 66 MeV. The nuclides of interest  ${}^6\text{He}$ ,  ${}^8\text{Li}$  and  ${}^9\text{Li}$  were identified. Further cross section measurements are planned using a beam chopper being installed at iThemba LABS. The detection setup includes two electron spectrometers composed of a 5mm thick plastic scintillator, for energy loss measurement, and a thin window Germanium detector (LEPS) for residual energy measurement. The E-DeltaE technique with this combination of detectors allows particle identification and high-resolution measurement simultaneously. The results of this investigation will be used to evaluate the feasibility of light neutron rich beams at iThemba LABS.

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

No

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

N/A

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

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