

Abstract Submitted  
for the DNP11 Meeting of  
The American Physical Society

**High Precision Measurement of Resonance States in  $^{18}\text{Ne}$ ,  $^{30}\text{S}$ , and  $^{38}\text{Ca}$  Nuclei using the (p,t) Reaction, and Reaction Rates in the  $\alpha$ p- and rp-Processes** T. ADACHI, KVI Univ. of Groningen, G.P.A. BERG, Univ. of Notre Dame, E.Z. BUTHELEZI, iThemba LABS, J. CARTER, Univ. of Witwatersrand, M. COUDER, Univ. of Notre Dame, R. FEARICK, Univ. of Cape Town, S.V. FÖRTSCH, iThemba LABS, J. GÖRRES, Univ. of Notre Dame, Y. KHESWA, J. MIRA, S. MURRAY, R. NEVELING, iThemba LABS, P. PAPKA, iThemba LABS, E. SIDERAS-HADDAD, Univ. of Witwatersrand, F.D. SMIT, J.A. SWARTZ, iThemba LABS, R. TALWAR, Univ. of Notre Dame, I. USMAN, iThemba LABS, J.J. VAN ZYL, Univ. of Stellenbosch, M. WIESCHER, S. O'BRIEN, Univ. of Notre Dame — Thermonuclear runaway reactions in type 1 X-ray burst are triggered by the breakout from the hot CNO cycles and is subsequently driven by  $\alpha$ p- and rp-processes. These time scales for the  $\alpha$ p- and rp-process are determined by the associated reaction rates, which depend exponentially on the associated resonance energies. High precision (p,t) measurement were performed at iThemba LABS to examine resonance states in  $^{18}\text{Ne}$ ,  $^{30}\text{S}$ , and  $^{38}\text{Ca}$  nuclei using the K600 spectrometer with a dispersion matched beam. Preliminary analysis will be presented.

A. Long  
Univ. of Notre Dame

Date submitted: 01 Jul 2011

Electronic form version 1.4