Abstract Submitted
for the APR08 Meeting of
The American Physical Society

Mass Measurements of Proton-Rich Isotopes between Mo and Pd using the Canadian Penning Trap Mass Spectrometer J. FALLIS, Manitoba/ANL, K.S. SHARMA, H. SHARMA, Manitoba, G. SAVARD, A.F. LEVAND, T. SUN, ANL, J.A. CLARK, C. DEIBEL, A. PARIKH, C. WREDE, Yale, D. LASCAR, R. SEGEL, Northwestern, S. CALDWELL, M. STERNBERG, J. VAN SCHELT, Chicago, F. BUCHINGER, J.E. CRAWFORD, S. GULICK, J.K.P. LEE, G. LI, McGill, N.D. SCIELZO, LLNL, A.A. HECHT, Maryland — In our understanding of the origin of elemental abundances the means of producing the observed abundances of ^{92}Mo and ^{94}Mo have long been unknown. These "light p" nuclei cannot be adequately produced by the classic p-process alone. The νp-process however, which occurs due to the neutrino wind in core collapse supernovae explosions, involves both proton-capture and neutron-capture reactions and can produce ^{92}Mo and ^{94}Mo. The final abundances of these isotopes depend directly on the values of the proton separation energies, S_p, along the reaction path of this process. Recent mass measurements performed with the Canadian Penning Trap Mass Spectrometer have dramatically reduced the uncertainties of S_p values of proton-rich nuclei between Mo and Pd. These measurements and the resulting implications for both the νp-process path and the ^{92}Mo/^{94}Mo abundance ratio will be discussed. This work was supported by grants from NSERC, Canada and the U.S. DOE, Nucl. Phys. Div.,under Contract W-31-109-ENG-38

Jennifer Fallis
Manitoba/ANL

Date submitted: 11 Jan 2008 Electronic form version 1.4