

Abstract Submitted
for the DNP08 Meeting of
The American Physical Society

Mass Measurements of Proton-Rich Isotopes Between Mo and Pd for rp - and νp -process Models JENNIFER FALLIS, Manitoba / ANL, K.S. SHARMA, H. SHARMA, Manitoba, J.A. CLARK, G. SAVARD, A.F. LEVAND, T. SUN, ANL, C.M. DEIBEL, C. WREDE, Yale, A. PARIKH, Technische Universität München, D. LASCAR, R. SEGEL, Northwestern, S. CALDWELL, J. VAN SCHELT, Chicago, F. BUCHINGER, J.E. CRAWFORD, S. GUILCK, J.K.P. LEE, G. LI, McGill, N.D. SCIELZO, LLNL, A.A. HECHT, Maryland — The reaction paths of two proposed nucleosynthetic processes on the proton-rich side of stability, the rp and νp processes, pass through a series of nuclides between Mo and Pd whose masses have long gone unmeasured. Measurements of these masses would provide the more precise proton-separation energies, S_p , needed to properly model the paths and final abundances of these two astrophysical processes. These S_p values are of particular interest to the νp process as it is a process which could resolve the long-standing underproduction of light p -nuclei such as ^{92}Mo and ^{94}Mo . Mass measurements of 14 proton-rich nuclides between Mo and Pd have been performed with the Canadian Penning trap mass spectrometer. These measurements have significantly reduced uncertainties in the associated S_p values by up to factors of 60. These results and their astrophysical implications will be discussed. This work supported by: NSERC, Canada and the U.S. DOE, Nuclear Physics Division, Contract Nos. DE-AC02-06CH11357 and DE-FG02-91ER-40609.

Jennifer Fallis
Manitoba / ANL

Date submitted: 01 Jul 2008

Electronic form version 1.4