Abstract Submitted for the APR17 Meeting of The American Physical Society

Studies of Beta-Delayed Neutron Emission using Trapped Ions<sup>1</sup> KEVIN SIEGL, A. APRAHAMIAN, Univ of Notre Dame, N.D. SCIELZO, LLNL, G. SAVARD, J.A. CLARK, A.F. LEVAND, ANL, M. BURKEY, S. CALDWELL, Univ of Chicago, A. CZESZUMSKA, UC Berkeley, T.Y. HIRSH, ANL, K. KO-LOS, LLNL, S.T. MARLEY, G.E. MORGAN, LSU, E.B. NORMAN, LBL, A. NYS-TROM, Univ of Notre Dame, R. ORFORD, McGill Univ, S. PADGETT, LLNL, A. PREZ GALVN, ANL, K.S. SH, Univ of Manitoba, S.Y. STRAUSS, Univ of Notre Dame, B.S. WANG, LLNL — Using a radio-frequency quadrupole ion trap to confine radioactive ions allows indirect measurements of beta-delayed neutron (BDN) emission. By determining the recoil energy of the beta-decay daughter ions it is possible to study BDN emission, as the neutron emission can impart a significantly larger nuclear recoil than from beta-decay alone. This method avoids most of the systematic uncertainties associated with direct neutron detection but introduces dependencies on the specifics of the decay and interactions of the ion with the RF fields. The decays of seven BDN precursors were studied using the Beta-decay Paul Trap (BPT) to confine fission fragments from the Californium Rare Isotope Breeder Upgrade (CARIBU) facility at Argonne National Laboratory. The analysis of these measurements and results for the branching ratios and neutron energy spectra will be presented.

<sup>1</sup>Supported by the NSF under grant PHY-1419765, and the U.S. DOE under the NEUP project 13-5485, contracts DE-AC02-06CH11357 (ANL) and DE-AC52-07NA27344 (LLNL), and award DE-NA0000979 (NNSA).

Kevin Siegl Univ of Notre Dame

Date submitted: 30 Sep 2016

Electronic form version 1.4