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Impact of comprehensive simulations on trapped ion beta-delayed neutron spectroscopy[1] 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, S.T. MARLEY, Univ of Notre Dame, G.E. MORGAN, Univ of Manitoba, E.B. NORMAN, LBL, A. NYSTROM, Univ of Notre Dame, R. ORFORD, McGill Univ, S. PADGETT, LLNL, A. PÉREZ GALVÁN, ANL, K.S. SHARMA, Univ of Manitoba, S. STRAUSS, Univ of Notre Dame, B.S. WANG, LLNL — The decay of radioactive ions confined in an RF ion trap allows indirect measurements of beta-delayed neutron emission. This is accomplished by measuring the energy of the recoiling ion which can be much larger after neutron emission than from just beta decay. This method removes most systematic errors from neutron detection but introduces dependencies on specifics of the decay and interactions of the ion with the RF fields. Measurements were made of the $^{134-136}$Sb beta decays with this technique at Argonne National Laboratory using the Californium Rare Isotope Breeder Upgrade (CARIBU). A suite of simulations were developed to model the interaction of the decays and the influence of the trap fields on the recoiling ions. Measurements of these data can impact many fields, such as nuclear energy, nuclear astrophysics, and stockpile stewardship. Results of the simulations and analyses will be reported.

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Kevin Siegl
Univ of Notre Dame

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