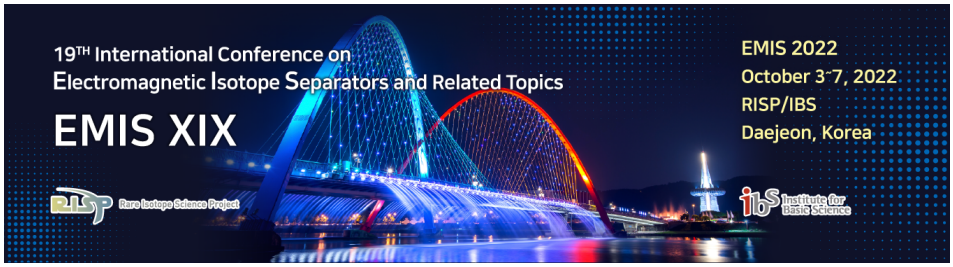

Contribution ID: **83** Type: **Poster Session**

Construction of the Superallowed Transition Beta-Neutrino Decay Ion Coincidence Trap

Monday, 3 October 2022 20:54 (8 minutes)

Nuclear beta decays provide a unique avenue for testing the electroweak part of the Standard Model through precision measurements. Physics beyond the Standard Model would manifest itself in these transitions through a variety of possible effects including a non-unitarity of the Cabibbo-Kobayashi-Maskawa quark mixing matrix, scalar or tensor currents, and interactions involving right-handed neutrinos. Probing these various effects in superallowed mixed beta decay transitions can be done through precision measurement of the beta-neutrino angular correlation parameter. As such, we are currently constructing at the Nuclear Science Laboratory of the University of Notre Dame the Superallowed Transition Beta-Neutrino Decay Ion Coincidence Trap (St. Benedict). St. Benedict will take a radioactive ion beam produced by TwinSol, thermalize it in a large volume gas cell, then transport it through two separate, differentially-pumped, volumes using a radio-frequency carpet and a radio-frequency quadrupole (RFQ) ion guide before injecting it into an RFQ trap to create cool ion bunches for injection into the measurement Paul trap. The status of the St. Benedict development will be presented. This work is supported by the US National Science Foundation under grant PHY-1725711.

Primary authors: GALLANT, Aaron (Lawrence Livermore National Laboratory); BRODEUR, Maxime (University of Notre Dame); VALVERDE, Adrian (Argonne National Laboratory); LIU, Biying (University of Notre Dame); BARDAYAN, Daniel (University of Notre Dame); RIVERO, Fabio (University of Notre Dame); SAVARD, Guy (Argonne National Laboratory); KOLATA, James (University of Notre Dame); O'MALLEY, Patrick (University of Notre Dame); ZITE, Regan (University of Notre Dame); PORTER, Sam (University of Notre Dame); BURDETTE, Daniel (Argonne National Laboratory); CLARK, Jason (Argonne National Laboratory); AHN, Tan (University of Notre Dame)

Presenter: BRODEUR, Maxime (University of Notre Dame)

Session Classification: Poster Session