Contribution ID: **154** Type: **Poster**

Nucleosynthesis of 60Fe and constraints on the nuclear level density and γ-ray strength function.

Tuesday, 26 June 2018 19:00 (1h 30m)

60Fe is created by neutron capture in massive stars prior to core collapse supernova. This isotope is one of only a handful whose gamma-rays from β-decay indicate ongoing nucleosynthesis in the Galaxy [1]. For this reason the reactions involved for the creation and destruction of 60Fe in this environment must be well understood. Due to the short half-life of 59Fe it is challenging to perform a direct capture reaction experiment to determine the cross section of 59Fe(n,γ)60Fe. Instead we used the β-decay of 60Mn to populate states at all energies in the 60Fe nucleus. The resulting γ-rays were collected using a 4π total-absorption spectrometer, SuN (Summing NaI(Tl) detector) [2], at the NSCL. With this data the β-Oslo method [3] can be applied to extract the nuclear level density and gamma-strength function needed for statistical models to calculate the reaction rate using experimentally constrained nuclear structure parameters. Preliminary results from the ongoing analysis will be presented.

Primary author: RICHMAN, Debra (NSCL, Michigan State University)

Co-authors: COUTURE, Aaron (Los Alamos National Laboratory); SPYROU, Artemis (NSCL, Michigan State University)

Presenter: RICHMAN, Debra (NSCL, Michigan State University)

Session Classification: Poster session