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Total Absorption Spectroscopy Study of the Beta Decay of ^{60}Mn to Constrain the Neutron Capture Rate of ^{60}Fe DEBRA RICHMAN, ARTEMIS SPYROU, ALEX DOMBOS, National Superconducting Cyclotron Laboratory (NSCL), Michigan State University, East Lansing, Michigan, 48824, AARON COUTURE, LANSCE, Los Alamos National Laboratory, Los Alamos, New Mexico, 87544, ON BEHALF OF E15034 COLLABORATION — Interest in ^{60}Fe, a long lived radioisotope synthesized in massive stars, has recently peaked. The signature of its decay allows us to probe astrophysical processes, events such as the early formation of the solar system and nucleosynthesis. To understand these observations a complete understanding of the creation, destruction and nuclear properties of ^{60}Fe in the astrophysical environment are required. Using the beta decay of ^{60}Mn in conjunction with total absorption spectroscopy (TAS), made possible by the high efficiency gamma ray calorimeter SuN (Summing NaI detector) at the National Superconducting Cyclotron Laboratory (NSCL), to study the distribution of beta-decay intensity over the daughter-nucleus ^{60}Fe, provides information about the structure of the daughter and improves the predictive power of astrophysical models. In addition to the ongoing TAS analysis, The Beta-Oslo method will be used to extract the nuclear level density and gamma-strength function of ^{60}Fe providing much needed constraints on the neutron capture reaction rate responsible for the creation of this nucleus.

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