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Nucleosynthesis of ^{60}Fe and constraints on the nuclear level density and photon strength function. DEBRA RICHMAN, ARTEMIS SPYROU, MALLORY SMITH, KATIE CHILDERS, REBECCA LEWIS, SEAN LIDDICK, STEPHANIE LYONS, ALICIA PALIMISANO, CHANDANA SUMITHRARACHCHI, Michigan State University , ALEX DOMBOS, FARHEEN NAQVI, University of Notre Dame, ANN-CECILIE LARSEN, MAGNE GUTTORMSEN, JOERGEN MIDTBOE, University of Oslo, PANOS GASTIS, GEORGIOS PERDIKAKIS, Central Michigan University, AARON COUTURE, CHRIS PROKOP, Los Alamos National Laboratory, ADRIANNA URECHE, University of California Berkeley, BEN CRIDER, Mississippi State University — ^{60}Fe is created in massive stars prior to core collapse supernova. The signature γ-rays from β-decay of this isotope indicate ongoing nucleosynthesis in the Galaxy among other interesting astrophysical processes. In order to understand these observations a complete understanding of the creation, destruction and nuclear properties of ^{60}Fe in the astrophysical environment are required. Due to the short half-life of ^{59}Fe a direct capture reaction experiment to determine the cross section of ^{59}Fe(n,γ)^{60}Fe has been a challenge and remains the most uncertain link in the reaction chain to date. Using the β-decay of a ^{60}Mn radioactive beam to populate high energy states in the ^{60}Fe nucleus, an indirect constraint for this reaction was made using the β-Oslo Method. Results from this analysis were used as input in TALYS and the new constraint on ^{59}Fe(n,γ)^{60}Fe will be presented.

Debra Richman
Michigan State University

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