Abstract Submitted
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Measurements of (alpha,n) cross-sections relevant for the weak r-process.[1] NABIN RIJAL, Michigan State Univ, S. AHN, Texas AM University, F. MONTES, Michigan State University, Z. MEISEL, Ohio University, H. SCHATZ, Michigan State University, HABANERO COLLABORATION — The fast-expanding neutron-rich neutrino-driven winds in the Core-Collapse SNe is one of the most favorable scenarios for the nucleosynthesis of the Z=38-47 elements. Charge particle reactions, especially (,n) on the A=80-90, create seeds for the weak r-process populating abundances of near stable isotopes for the Sr-Cd range. These abundances are significantly sensitive to the (,n) reaction rates. Only very few of these (,n) reactions had been measured in the energy range relevant for weak r-process astrophysical conditions. Sensitivity studies of such scenarios show that 85Br(,n) is one of the most significant reactions to impact the abundances of the seeds to the weak r-process. Theoretical reaction rates calculations for reactions for such scenarios are very uncertain and model-dependent. To measure the (,n) cross-sections of 85Br, 85Rb, and 75Ga, the HabaNERO detector was used which is a neutron counter system that includes either BF3 or 3He gas-filled proportional-counter tubes embedded in the matrix of polyethylene, designed to achieve constant and energy independent efficiency for neutrons in the range of 0.01-20 MeV. Preliminary results from these experiments along with brief details of the discrepancies with the Hauser-Fesbach model calculations will be presented.

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