

Abstract Submitted
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Measurements of (α,n) cross-sections relevant for the r-process¹ NABIN RIJAL, Michigan State University, S. AHN, IBS Center for Exotic Nuclear Studies, South Korea, 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 supernovae are favorable scenarios for the nucleosynthesis of the light-heavy elements. Charge particle reactions, especially (α,n) create seeds for the weak r-process populating abundances of near stable isotopes for the Sr-Ag range, for which there remains a large discrepancy between observed and predicted elemental abundances in the metal-poor halo stars. These abundances are significantly sensitive to the (α,n) reaction rates. Only very few of these reactions had been measured in the energy range relevant for weak r-process astrophysical conditions. Theoretical calculations of reaction rates for such scenarios are very uncertain and model-dependent. In this talk, I will discuss measurements of ^{85}Br , ^{75}Ga , and ^{85}Rb (α,n) cross-sections using the HabaNERO detector at ReA3, NSCL along with future possibilities to measure and constrain other important (α,n) reactions relevant for the r-process.

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