

Abstract Submitted
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Development of a Neutron Long Counter Detector for (α, n) Cross Section Measurements at Ohio University¹ KRISTYN BRANDENBURG, ZACH MEISEL, CARL R BRUNE, THOMAS MASSEY, DOUG SOLTESZ, SHIV SUBEDI, Department of Physics and Astronomy, Ohio University, Athens, OH, USA — The origin of the elements from roughly zinc-to-tin ($30 < Z < 50$) has yet to be determined. The neutron-rich neutrino driven wind of core collapse supernova (CCSN) is a proposed site for the nucleosynthesis of these elements. However, a significant source of uncertainty exists in elemental abundance yields from astrophysics model calculations due to the uncertainty for (α, n) reaction rates, as most of the relevant cross sections have yet to be measured. We are developing a neutron long counter tailored to measure neutrons for (α, n) reaction measurements performed at The Ohio University Edwards Accelerator Laboratory. The detector design will be optimized using the Monte-Carlo N-Particle transport code (MCNP6). Details of the optimization process, as well as the present status of the detector design will be provided. The plans for first (α, n) cross section measurements will also be briefly discussed.

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