

Abstract Submitted
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Measuring the fusion cross-section of $^{39,47}\text{K} + ^{28}\text{Si}$ at near barrier energies¹ JUSTIN VADAS, VARINDERJIT SINGH, BLAKE WIGGINS, JACOB HUSTON, SYLVIE HUDAN, ROMUALDO DESOUZA, Indiana Univ - Bloomington, ABDOU CHBIHI, DIETER ACKERMANN, GANIL, KYLE BROWN, Michigan State University — The outer crust of an accreting neutron star provides an interesting environment for nuclear reactions to occur. In particular, the enhancement of fusion between neutron-rich nuclei relative to their β -stable counterparts has been suggested as a trigger for an X-ray superburst. Recently, nuclei in the mass range of $A=20-40$ have been proposed as the most likely candidates for this process. To investigate this question, comparing the fusion excitation functions for both neutron-rich and β -stable nuclei at energies near the fusion barrier is necessary. The development of a ^{47}K radioactive beam at NSCLs ReA3 facility makes such a comparison possible for the first time. An approved experiment to measure the fusion excitation functions for $^{39,47}\text{K} + ^{28}\text{Si}$ will be described. This experiment utilizes a technique optimized for measuring the total fusion cross-section of reactions involving low-intensity ($10^3 - 10^6$ ions/s) radioactive beams. In addition, protons and α particles emitted by the compound nucleus as it de-excites are measured. Preliminary results will be presented.

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