Abstract Submitted
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Probing the fusion of neutron-rich nuclei with reaccelerated radioactive beams[1] JUSTIN VADAS, VARINDERJIT SINGH, BLAKE WIGGINS, JACOB HUSTON, SYLVIE HUDAN, ROMUALDO DESOUZA, ZIDU LIN, CHARLES HOROWITZ, Indiana Univ - Bloomington, ABDOU CHBIHI, DIETER ACKERMANN, GANIL, MICHAEL FAMIANO, Western Michigan University, KYLE BROWN, Michigan State University — Fusion in neutron-rich environments is presently a topic of considerable interest. For example, the optical emission spectrum from the neutron star merger GRB170817A clearly establishes this neutron-rich environment as an important nucleosynthetic site. A good approach to understand how fusion proceeds in neutron-rich nuclei is to measure the fusion excitation function for an isotopic chain of nuclei. Reaccelerated radioactive beam facilities provide the opportunity to systematically address this question. Using the ReA3 facility at NSCL, a ^{28}Si target was bombarded with beams of ^{39,47}K at near-barrier energies, $36 < E_{c.m.} < 43$ MeV. The low intensity of the radioactive ^{47}K beam (2-4 $\times$ 10^4 ions/s) necessitated the development of an efficient experimental technique. Incident ions were identified on a particle-by-particle basis by ΔE-TOF just upstream of the target. Fusion products were directly measured and identified by the E-TOF technique with an efficiency of $\sim$70%. The measured fusion excitation functions will be presented, and compared with coupled channels calculations.

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