

Abstract Submitted  
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**Fusion of neutron-rich O ions on a carbon target at near-barrier energies**<sup>1</sup> ROMUALDO DESOUZA, M.J. RUDOLPH, Z.Q. GOSSER, K. BROWN, S. HUDAN, Indiana University, A. CHBIHI, B. JACQUOT, GANIL, M. FAMIANO, Western Michigan University, F. LIANG, D. SHAPIRA, ORNL, D. MERCIER, CNRS — Experimental investigation of the sub-barrier fusion of neutron-rich light nuclei is important in understanding the crust of a neutron star, the structure of neutron-rich nuclei, and fusion dynamics of neutron-rich nuclei. It has recently been proposed that X-ray superbursts may originate from carbon burning ignited by heat from the fusion of neutron-rich oxygen nuclei in the crust of an accreting neutron stars [1]. An enhancement in the fusion probability, pronounced at energies near and below the Coulomb barrier, may signal the presence of different fusion dynamics as compared to the fusion of less neutron-rich nuclei. To assess if the fusion probability is enhanced for neutron-rich nuclei, we performed the first fusion excitation measurement for  $^{20}\text{O} + ^{12}\text{C}$  for  $E_{lab}/A=1-2$  MeV. Initial results of this experimental measurements will be presented.

[1] C.J. Horowitz, H. Dussan, and D.K. Berry, **Phys. Rev. C** **77**, 045807 (2008)

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Romualdo deSouza  
Indiana University

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