Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Measuring Near and Sub-Barrier Fusion of neutron-rich oxygen nuclei on a carbon target[1] R.T. DESOUZA, Z. GOSSER, M.J. RUDOLPH, B. FLOYD, S. HUDAN, A.B. MCINTOSH, H. DUSSAN, C.J. HOROWITZ, IUCF, Indiana University, M. FAMIANO, Western Michigan Univ., A. CHBIHI, J.-P. WIELECZKO, GANIL, C. GROSS, F. LIANG, D. SHAPIRA, ORNL, R. VARNER, I. PAWELCZAK, M. QUINLAN, Y.T. TSAI, W.U. SCHROEDER, J. TOKE, Univ. of Rochester — Experimental investigation of the sub-barrier fusion of neutron-rich light nuclei is important in understanding the crusts of neutron stars, 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 crusts of 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 intend to measure the fusion excitation function of ^{16,20}O + ^{12}C for $E_{lab} < 60$ MeV. We will describe the experimental setup associated with such a measurement. [1] C.J. Horowitz, H. Dussan, and D.K. Berry, **Phys. Rev. C 77, 045807 (2008)**

[1]Supported by U.S. DOE Grant No. DE.FG02-88ER.40404

R.T. deSouza
Dept. of Chemistry/IUCF, Indiana University

Date submitted: 09 Jan 2009 Electronic form version 1.4