

Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Fusion of ^{124}Sn with $^{40,48}\text{Ca}$ ¹ A. VILLANO, H. AMRO, F.D. BECHETTI, Univ. of Michigan, J.J. KOLATA, A. ROBERTS, Univ. of Notre Dame, D. SHAPIRA, J.F. LIANG, C.J. GROSS, R.L. VARNER, Oak Ridge National Laboratory, E. CHAVEZ, IFUNAM, Mexico, W. LOVELAND, Chemistry Dept., Oregon State Univ. — Fusion of ^{124}Sn with $^{40,48}\text{Ca}$ near and below the barrier has been measured at ORNL. The ultimate goal is to compare with fusion of ^{132}Sn on the same targets to study the effects of neutron excess and neutron-transfer Q-values on fusion. The Ca isotopes are ideal for this purpose since an identical ^{172}Yb composite system is produced using two essentially spherical targets, thus reducing deformation effects on fusion. The $^{124}\text{Sn}+^{48}\text{Ca}$ system displays weak sub-barrier fusion enhancement which is completely accounted for by coupling to the first 2^+ and 3^- states in the target and projectile, but $^{124}\text{Sn}+^{40}\text{Ca}$ fusion is strongly enhanced below the barrier. This effect appears to be related to the large positive Q-values for $^{124}\text{Sn}+^{40}\text{Ca}$ neutron transfer reactions. The implications for $^{132}\text{Sn}+^{40,48}\text{Ca}$ fusion will be discussed.

¹This work was supported by the US NSF under Grant No. PHY0652591, and by the US Dept. of Energy, Office of Nuclear Physics.

James Kolata
University of Notre Dame

Date submitted: 24 Jun 2009

Electronic form version 1.4