

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Assessing the impact of valence sd neutrons and protons on fusion¹ ROHIT KUMAR, VARINDERJIT SINGH, J. VADAS, T.K. STEINBACH, B.B. WIGGINS, S. HUDAN, R.T. DESOUZA, Indiana University Bloomington — Assessing the impact of valence sd neutrons and protons on fusion Experimental near-barrier fusion cross-sections for $^{17}\text{F} + ^{12}\text{C}$ are compared to the fusion excitation functions for $^{16,18}\text{O}$, ^{19}F , and ^{20}Ne ions on a carbon target. Comparison of the reduced fusion cross-section for the different systems accounts for the differing static size of the incident ions and changes in fusion barrier. Remaining trends of the fusion cross-section above the barrier are observed. These trends are interpreted as the interplay of the sd protons and neutrons. The experimental data are also compared to a widely-used analytic model of near-barrier fusion, a time-dependent Hartree-Fock model, and coupled channels calculations.

¹This work was supported by the U.S. Department of Energy under Grant Nos. DE-FG02-88ER-40404 (Indiana University), and the National Science Foundation under Grant No PHY- 1491574 (Florida State University). J.V. acknowledges the support of a NSF Graduate Research Fellowship under Grant No. 1342962.

Rohit Kumar
Indiana University Bloomington

Date submitted: 07 Jan 2021

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