Abstract Submitted
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Elastic scattering of ^{3}He+^{4}He with SONIK[1] S.N. PANERU, C.R. BRUNE, R. GIRI, Ohio U., D.S. CONNOLLY, B. DAVIDS, C. RUIZ, A. LENNARZ, M. ALCORTA, M. BOWRY, M. DELGADO, N. ESKER, A. GARNSWORTHY, D. HUTCHEON, C. PEARSON, C. SEEMAN, P. MACHULE, TRIUMF, U. GREIFE, J. KARPESKY, M. LOVELY, Colorado Sch. of Mines, J. FALLIS, North Island Coll., A. CHEN, McMaster U., F. LADDARAN, U. of British Columbia, A. FIRMINO, U. of Victoria — Elastic scattering of ^{3}He+^{4}He is important for a theoretical and phenomenological understanding of ^{4}He(^{3}He,γ)^{7}Be, a key reaction in big bang nucleosynthesis and solar neutrino physics. The astrophysical S factor for this reaction is a dominant source of uncertainty in the prediction of ^{7}Be and ^{8}B solar neutrino flux using standard solar model. The elastic scattering measurements reported in the literature do not extend to low energies and lack proper uncertainty quantification. A new measurement of ^{4}He(^{3}He,^{3}He)^{4}He elastic scattering has been measured for $0.72 \leq$ E[^{3}He] ≤ 5.48 MeV using Scattering of Nuclei in Inverse Kinematics (SONIK) scattering chamber, a windowless, extended gas target surrounded by an array of 30 doubly-collimated silicon charged particle detectors situated at TRIUMF. Experimental techniques and the results from the experiment will be discussed. The results from the R-matrix analysis of the elastic scattering data will be presented.

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Som Paneru
Ohio Univ

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