Abstract Submitted
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Elastic scattering of ^{3}He+α with SONIK.[1] S.N. PANERU, C.R. BRUNE, R. GIRI, Ohio U., D. 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 College, A. CHEN, McMaster U., F. LADDARAN, U. of British Columbia, A. FIRMINO, U. of Victoria — Elastic scattering of ^{3}He+α is essential for a theoretical and phenomenological understanding of ^{3}He(α,γ)^{7}Be, a key reaction in big bang nucleosynthesis and solar neutrino physics. Elastic scattering data for ^{3}He+α can be used in a phenomenological R-matrix analysis to extrapolate the ^{3}He(α,γ)^{7}Be astrophysical S-factor (S_{34}) to solar energies. The flux predictions for ^{7}Be and ^{8}B solar neutrinos depend critically on S_{34}. Thus, it is important to improve the accuracy and precision of S_{34} at solar energies. The existing α(^{3}He,^{3}He)α data do not extend to low energies and lack the precision required to constrain the extrapolation of S_{34} to solar energies. A new measurement of α(^{3}He,^{3}He)α was performed 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, ISAC-I. The measurement was performed at 9 energies with $0.873 \leq E[^3\text{He}] \leq 5.462$ MeV covering an angular range of $22.5^\text{o} \leq \theta_\text{lab} \leq 135^\text{o}$. Experimental techniques and preliminary results from the experiment will be discussed.

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Som Paneru
Ohio University

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