

Abstract Submitted
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Measurement of the total neutron cross section on argon in the energy range 30-70 keV¹ TYLER ERJAVEC, University of California, Davis, ARTIE COLLABORATION — The use of liquid argon as a detection and shielding medium for neutrino and dark matter experiments has made the precise knowledge of the cross section for neutron interactions on argon an important design and operational parameter. Nevertheless, there has been a lingering discrepancy between the total cross-section in the 30-70 keV region given in the Evaluated Nuclear Data File (ENDF) and the single measurement done in the 1990's by an experiment optimized for higher energy. This discrepancy is significant in that the former predicts a large negative resonance in the region while the measurement did not report such a feature, giving rise to significant uncertainty in the penetration depth of neutrons through liquid argon. This paper presents results from the Argon Resonant Transport Interaction Experiment (ARTIE) at the Los Alamos Neutron Science Center (LANSCE), the first dedicated experiment optimized for this energy region. The ARTIE measurement of the total cross-section as a function of energy confirms the existence of a negative resonance in this region, but not quite as deep as the ENDF prediction.

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