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Neutron Scattering Cross Section Measurements for ^{169}TM via the Time-of-Flight Technique AFRIM ALIMETI, JAMES EGAN, GUNTER KEGEL, UMass Lowell, DEPT. OF PHYSICS AND APPLIED PHYSICS NUCLEAR PHYSICS TEAM — This research entails the first direct neutron scattering cross section measurements for ^{169}Tm via the time-of-flight technique. Neutron elastic and inelastic cross-section angular distributions were measured at 590-keV and 1000-keV incident neutron energies. Differential cross-section excitation functions were also measured in 0.1-MeV steps at 125^o (scattering angle) from 495-keV to 1000-keV incident energy. The elastic measurements in the 0.5-MeV to 1.0-MeV incident neutron energy range compare favorably with the JENDL-4.0 evaluation based on nuclear reaction model calculations in the Japanese Evaluated Nuclear Data Library. The inelastic measurements are compared to JENDL-4.0 and to earlier measurements by Ko *et al.* (*Nucl. Phys.* **A679**, 147-162 (2000)) who used the (n, n' γ) technique for states above 100 keV in excitation. The measurements were made using the UMass Lowell 5.5-MV Van de Graaff accelerator, operated in the pulsed and bunched beam mode, producing subnanosecond proton pulses at a 5-MHz repetition rate to generate neutrons via the ^{7}Li(p,n)^{7}Be reaction in a thin metallic elemental lithium target.

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