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Neutron-capture cross-section measurements of ^{40}Ar and ^{136}Xe in the energy region 0.7-14.8 MeV MEGHA BHIKE, WERNER TORNOW, Department of Physics/TUNL, Duke University — Cross-section measurements for the reaction ^{40}Ar(n,γ)^{41}Ar have been carried out with the activation method in the neutron energy region 0.7-14.8 MeV. These results are important to identify backgrounds in liquid argon based neutrino detectors and in the neutrinoless double-β decay experiment GERDA, which uses argon as cooling and shielding medium. A high-pressure gas cell of ^{40}Ar was irradiated with monoenergetic neutrons produced either by the ^{3}H(p,n)^{3}He, ^{2}H(d,n)^{3}He or ^{3}H(d,n)^{4}He reactions. Indium and Au monitor foils were irradiated simultaneously to determine the incident neutron flux. The activities induced by the reaction products were measured using high-resolution γ-ray spctroscopy. The data are compared with the available data evaluations. Measurements of the ^{136}Xe(n,γ)^{137}Xe cross section are underway and preliminary results will be presented as well. The latter data are important for the EXO and KamLAND-Zen neutrinoless double-β decay searches.

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