



Poster session 4 – Friday 8 July

P4.077 Measurement of neutron capture on ^{136}Xe

S Daugherty¹, J Albert¹, T Johnson¹, T O'Conner¹, L Kaufman¹, A Couture², J Ullmann² and M Krtička³

¹Indiana University, USA, ²Los Alamos National Lab, USA, ³Charles University in Prague, Czech Republic

The search for neutrinoless double beta decay ($0\nu\beta\beta$), a rare process which may reveal the Dirac/Majorana nature of the neutrino, requires a careful understanding of all backgrounds, including neutron-induced ones. A precise study of neutron capture on ^{136}Xe , a common isotope in double beta decay experiments, is necessary for the background models in experiments such as EXO-200 and, in the future, nEXO. Neutron capture on ^{136}Xe has been studied at the Detector for Advanced Capture Experiments (DANCE) at the Los Alamos Neutron Science Center. A xenon gas cell was exposed to a neutron beam with incident energies of thermal through 100 keV. The relative neutron cross sections for neutron capture at thermal and first resonance energies have been measured. The gamma cascades for these captures have also been measured, and cascade models have been developed. This, and other studies of neutron interactions on ^{136}Xe , will lead to improved sensitivity to neutrinoless double beta decay in the future.