

Abstract Submitted
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Mu2e Neutron/Gamma Background Analysis MORGAN ROSENDAHL, Univ of Houston, MOHAMED AHMED, TUNL, DAMIEN ALEXANDER, AJI DANIEL, ED HUNGERFORD, Univ of Houston, MARK SIKORA, TUNL, ALCAP COLLABORATION — In Mu2e, a muon-to-electron conversion experiment that will search for neutrinoless lepton conversion with a single event sensitivity of 10^{-16} , a large flux of neutrons with energies less than 10 MeV are emitted after muon capture in the stopping target. These neutrons, and gamma radiation resulting from their absorption, comprise a major component of experimental backgrounds. However, they are not currently sufficiently understood to reliably mitigate single-event-upsets in the readout electronics and time-to-failure of the detector components. At the Paul Scherrer Institute, PSI, a program was undertaken to measure neutron and charged particle emission after muon capture in targets of interest. Two BC501A neutron counters, a Ge, and a LaBr3 detector were used to measure the rates and spectra of emitted neutrons, X-rays, and gammas. The ongoing analysis of this data will provide characterization of the neutron and gamma spectra at low energies. Because the lifetime of a captured muon is nearly a microsecond, the neutron energy spectrum must be determined by unfolding methods. This presentation will discuss the experiment, neutron detector calibrations, and the progress of the analysis.

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