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(U*) (POS-40) Cosmogenic Muon Background Characterization for nEXO

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The nEXO experiment is being designed to search for neutrino-less double beta decay ($0\nu\beta\beta$) in a 5000 kg liquid xenon time projection chamber (TPC) enriched to the isotope xenon-136. nEXO's sensitivity reach to the $0\nu\beta\beta$ half-life requires extremely low backgrounds from external sources. Backgrounds are dealt with in part by surrounding the TPC with an outer detector (OD) in the form of a cylindrical water tank. The OD serves both to shield from incident particles like gamma and neutron radiation, as well as to veto cosmogenic backgrounds by detecting the Cherenkov light of passing muons using photomultiplier tubes (PMTs).

In this talk, we discuss the simulation of incident cosmic muons and their respective event characterization. We examine the interrelatedness of muon path lengths, muon impact parameters, PMT geometries and the comparative detection efficiencies for the incident particles.

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