

Abstract Submitted
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Backgrounds from muon-induced spallation in underground detectors WEISHI LI, The Ohio State University — Cosmic ray muons induce spallation reactions (nuclear breakups) when passing through underground detectors. For example, subsequent beta decays can lead to detector backgrounds that mimic neutrino signals, and isotopes with long lifetimes are especially difficult to cut. In a recent paper from Super-Kamiokande collaboration, a correlation between the eventual spallation event position and a peak in the prior muon Cherenkov light profile was found. We calculate the rates and properties of electromagnetic showers induced by muons in the Super-Kamiokande detector and the subsequent spallation products, and compare these to data. A better theoretical understanding of these processes will help in developing new techniques to reduce detector backgrounds.

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