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**Neutrons, a Trouble-Maker for Double-Beta Decay and Dark Matter Experiments** ANDREW HIME, DONGMING MEI, Los Alamos National Laboratory — Neutrons and neutron-induced cosmogenic radioactivity are an important background for underground experiments in rare events search for double-beta decay and dark matter. The problem of neutron-induced cosmogenic activation at sea level in materials is studied. We perform a Monte Carlo simulation to evaluate the neutron-induced background underground for double-beta decay and dark matter experiments. The  $(\alpha, n)$  neutrons are studied in terms of the radio-purity of rock composition and muon-induced neutrons are evaluated according to the depth. The shielding of  $(\alpha, n)$  neutrons as a function of thickness of polyethylene is modeled. The correlation of the underground muon flux seasonal variation and the annual modulation signal for dark matter experiments is examined. We present a depth-sensitivity relation (DSR) for underground experiments.

Dongming Mei  
Los Alamos National Laboratory

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