

MUON-INDUCED BACKGROUND AND DEPTH REQUIREMENTS OF UNDERGROUND LABORATORIES

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Muon-induced background can limit the sensitivity of next generation experiments searching for neutrinoless double beta decay and WIMP dark matter. We have established a Depth-Sensitivity-Relation based upon the muon and muon-induced fast neutron fluxes and spectra for a number of underground laboratories. Our results indicate that the muon-induced neutron elastic and inelastic scattering processes can be a significant background for many of the next generation dark matter and double beta decay experiments under development, unless such experiments are staged deep underground. We discuss these results and bench-mark the accuracy of simulations against the available experimental data.