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Poster Session – Submission of Abstract

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Title of the Poster: Neutron Shielding Simulations and Muon-induced Neutrons

Abstract Text:

Neutrons can create background in experiments built to search for rare events like neutrinoless double beta decay. Cosmic ray induced neutrons can activate materials used in the experiment during transportation or storage. Although neutrons can be shielded during storage and transportation, muons penetrate and can produce neutrons inside the shield.

Cosmic-ray neutrons and muons were simulated with the GEANT4 based framework MaGe to determine the shielding indices for different materials. The effects of backscattering and angular distributions will be discussed.

The MINIDEX experiment aiming to measure muon-induced neutrons in different target materials will be presented.

Summary:

Cosmic-ray neutrons and muons were simulated with MaGe to determine the shielding indices for plastic, water soil and steel. The influence of neutron backscattering was found to be significant - especially for high Z materials.

The MINIDEX experiment for measurement of muon-induced neutrons in different materials will start its operation beginning of this year.

Keywords: Cosmic-ray neutrons, muon-induced neutrons, shielding, MINIDEX