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Measurement of cosmic-muon induced neutrons with the MINIDEX experiment

Cosmic-muon induced neutrons are an important source of background in low-background experiments searching for rare phenomena, like neutrinoless double beta decay or dark matter. These neutrons can generate radioactive isotopes in the shielding materials or in the detector itself, creating background which can not be easily removed by a cosmic-muon veto due to the time delay. The Muon-Induced Neutron Indirect Detection EXperiment, MINIDEX, running in the shallow undergound laboratory at the University of Tübingen, measures the production of muon-induced neutrons in a variety of high-Z materials, including lead and copper. Recently, the experiment has been upgraded to measure the neutron production not only from through-going muons but also from stopped muons. The design of the experiment and the upgrade are presented as well as selected results.

Mini-abstract

Measurement of cosmic-muon induced neutrons in high-Z materials in shallow underground laboratory.

Experiment/Collaboration

MINIDEX

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