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Measurement of the neutron yield induced by muons in liquid scintillator and iron at LNGS with the LVD experiment

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Fast neutrons from cosmic muons are the ultimate background for any experiments searching for rare events deep underground. The LVD detector, installed at the LNGS, is a multipurpose detector consisting of 1000 t of liquid scintillator and 1000 t of iron.
The main reaction that is detected by LVD is the inverse beta decay which gives two signals: a prompt one due to the e+ followed by the gamma from neutron capture on hydrogen. Thanks to its trigger logic, LVD can is suited to detect both muons and neutrons.
Using the data collected with LVD during 4 years and with the support of a full Monte Carlo simulation, based on Geant4, the neutron yield in liquid scintillator and iron are measured.

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