

NEUTRON BACKGROUND MEASUREMENTS IN THE CALLIOLAB LABORATORY OF THE PYHÄSALMI MINE

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Measurements of the background neutron environment, at depth of 4000 mwe (1400 meters) in the new CallioLab laboratory in the Pyhäsalmi mine, Finland, are in the design and preparatory phase. They are planned to be started in Autumn, 2016. Signals from dark matter or other rare processes require low background, and especially for dark matter experiments the neutron background is crucial and needs to be measured before any experimental activity.

Neutron background consists of two components. Muon-induced component can be reduced by the depth. The other component depends on the rock properties and may vary substantially by the location.

The neutron background measurement in the CallioLab laboratory is planned to be performed with a liquid scintillator experiment. The volume of the detector is currently under investigations, but the order is 100 liters. Most probably LAB (linear alkylbenzene) will be used. Small amount of ⁶Li isotope in the liquid will be used to enhance the thermal neutron capture cross section. The experiment is similar to that performed in the Underground Laboratory of Modane, France (LSM) [1].

First results of the layout of the detector will be shown.

[1] V. Chazal *et al.*, *Astroparticle Physics* **9**, 163-172 (1998).