Contribution ID: **215** Type: **Poster**

Commissioning of a mobile neutron spectrometer for the LNGS underground laboratory

Neutrons constitute a major background in direct dark matter searches, yet previous measurements at LNGS have reported notable discrepancies in both flux values and energy spectra. These inconsistencies arise from variations in detector technologies, calibration methods, and energy windows used in different studies. Precise knowledge of this background is necessary to devise shielding and veto mechanisms, improving the sensitivity of underground experiments.
To address this challenge, we have developed ALMOND (An LNGS Mobile Neutron Detector): a mobile, low-flux neutron spectrometer based on a plastic scintillator array covered by gadolinium foils. ALMOND was designed and built at KIT as a stand-alone system to measure background in different locations. In this talk, we present the commissioning and calibration of the detector at KIT and at the Frascati Neutron Generator, introduce our first experimental campaign to measure the neutron background in Hall A at LNGS, and discuss future perspectives.

This project is funded by the German Federal Ministry of Education and Research (BMBF) under the grant number 05A21VK1.

Secondary track

T02 - Dark Matter

Author: POMPA, FRANCESCO (University of L'Aquila, INFN LNGS & KIT)

Presenter: POMPA, FRANCESCO (University of L'Aquila, INFN LNGS & KIT)

Session Classification: T11

Track Classification: T11 - Detectors