Contribution ID: **46** Type: **Poster**

# Energy calibration for the SND@LHC hadronic calorimeter

SND@LHC is a compact, standalone experiment located in the TI18 tunnel, 480 meters downstream of the ATLAS interaction point, designed to observe neutrinos produced in LHC proton-proton (pp) collisions. The SND@LHC detector allows for the identification of all three flavors of neutrino interactions in the pseudorapidity region $7.2 < \eta < 8.4$ within an unexplored energy range of 100 GeV < E < 1 TeV.
The detector consists of two sections: an instrumented target and a hadron calorimeter. Energetic $\nu$N collisions in the target produce hadronic showers. Reconstructing the total energy requires estimating the fractions of energy deposited in both the target and the calorimeter. To achieve this, a replica of the detector was exposed to hadron beams with energies ranging from 100 to 300 GeV at the CERN SPS H8 test beam line during the summer of 2023. The experimental setup allowed for the study of showers as a function of both energy and shower starting position within the target depth. Thanks to this calibration procedure, an energy resolution of 15-20% for the reconstruction of hadronic showers was achieved. This result enables the reconstruction of the energy spectrum of hadronic showers from muon neutrino interactions, a key ingredient for the SND@LHC physics programme.

## Secondary track

T03 - Neutrino Physics

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**Session Classification:** T11

**Track Classification:** T11 - Detectors