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Shower Tagging and Energy Reconstruction in SND@LHC

The Scattering and Neutrino Detector (SND@LHC) is a new experiment located in the TI18 tunnel at CERN, designed to measure neutrinos in an unexplored pseudo-rapidity region complementary to other experiments at the LHC. The detector consists of an 800 kg target of tungsten plates interleaved with emulsion and electronic trackers, followed downstream by a sampling calorimeter and a muon system. Its configuration allows for discriminating between all three neutrino flavours, which is particularly interesting for future circular colliders and predictions of high-energy atmospheric neutrinos. The first phase aims to run the detector throughout LHC Run 3 to collect 290 fb^{-1}.

The calorimetric information is crucial to estimate the energy of the shower produced by the incoming neutrino. For this reason, a dedicated test beam was used to compute the calorimeter response as a function of the hadron shower energy and of the shower origin in the target.

SND@LHC calorimeter is made of five Scintillating Fibers (SciFi) modules, interleaved with Tungsten walls (1.5 $_{int}$ total), and five Upstream (US) stations of scintillating bars, interleaved with Iron walls (9.5 $_{int}$ total).

This poster will present how the calibration was performed and the first application on physics data, estimating the shower energy of the first neutrino candidates identified.

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