

The ENUBET Demonstrator: instrumented decay tunnel prototype for a monitored neutrino beam

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The ENUBET (Enhanced NeUtrino BEams from kaon Tagging) project is aimed at designing and experimentally demonstrating the concept of monitored neutrino beams. These novel beams are enhanced by an instrumented decay tunnel, whose detectors reconstruct large-angle charged leptons produced in the tunnel and give a direct estimate of the neutrino flux at the source. The detector technology for the instrumented decay tunnel was investigated by the ENUBET collaboration with an extensive prototyping activity which culminated in the construction of a Demonstrator (a prototype of the instrumented decay tunnel). The Demonstrator is a 1.7 m long quarter section of the instrumented tunnel which consists of a modular sampling calorimeter and a separate photon veto, allowing for an identification of the charged leptons at a single particle level. The goal of the Demonstrator is to show that with cost-effective technologies, it is possible to achieve charged leptons identification performance allowing for a reduction to ~1% of the overall uncertainty in the electron neutrino flux estimation. In this poster I will focus on the Demonstrator design and present preliminary analysis of the performance during the tests performed with charged particle beams at CERN East Experimental Area.

Poster prize

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