# THE ENUBET PROJECT - A MONITORED NARROW-BAND NEUTRINO BEAM


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The ENUBET experiment [1], included in the CERN Neutrino Platform effort as NP06/ENUBET, is developing a new neutrino beam based on conventional techniques in which the flux and the flavor composition are known with unprecedented precision (O(1%)). This is accomplished monitoring the associated charged leptons produced in the decay region of the ENUBET facility. Positrons and muons from kaon decays are measured by a segmented calorimeter instrumenting the walls of the decay tunnel, while muon stations after the hadron dump can be used to monitor the neutrino component from pion decays. Furthermore, the narrow momentum width (<10%) of the beam provides a precise measurement (O(10%)) of the neutrino energy on an event by event basis, thanks to its correlation with the radial position of the interaction at the neutrino detector. ENUBET is therefore the ideal facility for a high precision neutrino cross-section measurement at the GeV Scale, that could enhance the discovery potential of the next-generation of long baseline experiments, and for the study of non-standard neutrino models.

I will present the latest improved design of the proton target and of the meson transfer line, that ensures a larger neutrino flux while preserving a purity in the lepton monitoring. The final design of the ENUBET demonstrator for the instrumented decay tunnel, that is due by end 2021, will be also discussed. It has been determined on the basis of the results of the 2016-2018 test beams and will prove the scalability and performance of the selected detector technology. I will also report on progress on the full simulation of the ENUBET facility and of the lepton reconstruction, towards the full assessment of neutrino flux systematics. Lastly, I will briefly discuss the possibility of working in synergy with nuSTORM in the context of a site-dependent implementation of ENUBET at CERN which is currently under investigation.


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[1] ENUBET is an ERC project. Consolidator Grant, Jun 2016 - May 2022. PI: A. Longhin