

S.BORDONI, P. SALA

INTRODUCTION

CENF-ND MEETING - 1ST MARCH 2019

INTRODUCTION

- ▶ Last December we submitted a document to the call for input to the ESPP (#106).
- ▶ The document is also available in [ArXiv](#)
- ▶ The document was reviewed by the Physics Preparatory Group and will be included in the deliberations of the Strategy Update. Debates will be organised in parallel session at the meeting in Granada <https://cafpe.ugr.es/epps2019/>
- ▶ One topic we suggest is the need for a beam at very low momentum (<1 GeV)

Input from the CERN-ND Forum to the 2020 Update of the European Strategy for Particle Physics

Research and Development for Near Detector Systems Towards Long Term Evolution of Ultra-precise Long-baseline Neutrino Experiments.

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(On behalf of the CERN CENF-ND Forum)

Abstract

With the discovery of non-zero value of θ_{13} mixing angle, the next generation of long-baseline neutrino (LBN) experiments offers the possibility of obtaining statistically significant samples of muon and electron neutrinos and anti-neutrinos with large oscillation effects. In this document we intend to highlight the importance of Near Detector facilities in LBN experiments to both constrain the systematic uncertainties affecting oscillation analyses but also to perform, thanks to their close location, measurements of broad benefit for LBN physics goals. A strong European contribution to these efforts is possible.

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VVLE AT CERN – CALL FOR INPUT

- ▶ Neutrino secondary particles can have energies of some hundreds of MeV and the current experimental facility at CERN cannot provide pure and collimated hadron beam (for electrons is a bit better)
- ▶ Some facility with sub-GeV beam exists in Europe like DESY, PSI, COSY or at Fermilab (LArIAT beamline)
- ▶ Having this also at CERN with eventually additional features like fully instrumented beamline, cryogenics, magnet can be interesting for preparing the next generation of LBN experiments
- ▶ While preparing the ESPP document, we started to investigate possible requirements for a VVLE. Today's meeting aim to clarify the real interests from the different detectors/ experiments about this option
- ▶ If an interest is confirmed, we can start a campaign of feasibility studies