Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Status and Advances of the DUNE External Calibration Systems

MATTIA FANI, Los Alamos National Laboratory — The Deep Underground Neutrino Experiment (DUNE) is the next generation long-baseline experiment for neutrino physics. DUNE will measure the oscillation probabilities of neutrinos and antineutrinos at unprecedented precision to quantify the Charge-Parity (CP) violation effects in the leptonic sector and shed light on the matter-antimatter asymmetry in the universe. An ambitious scientific programme for the largest LArTPC detectors ever built, such as the DUNE Far Detector (FD) modules, requires outstanding detector performances and measurement precision. In particular, the DUNE Ionization Laser system (IoLS) will provide fine-grained measurements of drift velocity and electric field distortions, help diagnose detector defects such as cathode segment misalignments or field cage resistor failures, and most likely be able to make energy-based measurements. In this talk, I will introduce the calibration needs for the DUNE-FD and provide an overview of the external calibration systems planned in order to achieve the physics goals of DUNE. I will briefly talk about the status of various calibration systems with a focus on the DUNE-IoLS and present the latest updates.

Mattia Fani
Los Alamos National Laboratory

Date submitted: 07 Jan 2021 Electronic form version 1.4