

# Seminários de Física

CFUM, LIP-Minho, DF

## DUNE: Probing the origin of matter with neutrino oscillations

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Thursday

July 4<sup>th</sup>, 2019

15h00

Anfiteatro Dep. Física

Campus de Gualtar

Braga

### Summary:

\_ We know that the Universe has more matter than antimatter but we don't know exactly why. There are some types of processes, that do not conserve simultaneously the Charge and Parity of the particles (the so-called CP violation), that could help to explain that mystery. However, we know that the CP violation of quarks with Standard Model Physics is not strong enough. The question is now: can CP violation in neutrino oscillations explain the matter/antimatter asymmetry?

\_ To answer this, we will send very intense beams of muon neutrinos and antineutrinos from Fermilab (Chicago, USA) to South Dakota and measure with precision their transformation to electron neutrinos and antineutrinos. This requires very large detectors using the ambitious and promising technology of Liquid Argon Time Projection Chamber. This seminar will describe the physics goals and technology of the DUNE project, concluding with the plans for the calibrations of the detector and prototyping activities at CERN.