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DUNE

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For now two decades, an extensive neutrino oscillations experimental era dramatically improved our knowledge on the 3-neutrino oscillations paradigm. This program, though, almost only focused on the electron and muon neutrinos, and our knowledge on the tau neutrino mostly relies on leptonic universality.

DUNE (Deep Underground Neutrino Experiment) is a next generation of neutrino oscillations experiment tuned to probe electron neutrino appearance in an artificial beam of muon neutrinos between Fermilab and the Sanford Underground Research Facility (South Dakota). Its 1285 km baseline and the spatial/calorimetric precision of its gigantic far detectors makes it ideally suited to study tau neutrino appearance with an unprecedented sensitivity. This will allow, among others, performing a unique test of the consistency of the 3 flavour neutrino paradigm as well as help constraining the PMNS matrix unitarity.

In this talk I will discuss the main physics topics related to tau neutrino physics and present the current status of the non-trivial search for tau neutrino identification for the DUNE experiment at the simulation level.

What is your topic?

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