Laboratoire LEPRINCE-RINGUET
Ecole polytechnique IN2P3/CNRS

Séminaire

The DsTau project: Study of tau neutrino production with nano-precision particle detector

Precise measurement of the ν_τ cross-section would enable a test of lepton universality in neutrino scattering and searches for new physics effects in ν_τ-nucleon interactions. It also has practical implications for neutrino oscillation experiments. The only practical method to produce a tau neutrino beam is through the decays of Ds mesons, whose production lacks measurement. Eventually, the uncertainties of the accelerator-based tau neutrino measurements is dominated by the uncertainty of the Ds meson production process.

The DsTau project studies tau-neutrino production following 400 GeV proton-nucleus interactions at the CERN SPS, aiming at providing fundamental inputs for future ν_τ measurements. For this purpose, emulsion detectors with a nanometre-precision readout will be used to detect the particular decay topology of the $Ds \rightarrow \tau \rightarrow X$ double kinks in a few mm range.

The project overview, results from the beam tests and the analysis status of the pilot run in 2018 will be presented together with a prospect for the physics run in 2021.

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Salle conférence du LLR

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Responsables séminaires

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