

## DsTau experiment and introduction to SHiP

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The knowledge about tau neutrino features is still rather poor comparing with muon or electron neutrino. One of the basic features, the tau neutrino cross-section, was only measured by DONUT in 2008 with large systematical error of 50% and also large statistical error of 33%.

In the future experiments, a large number of tau neutrino events will be collected for precise measurement on tau neutrino features. The DsTau experiment is going to provide precise information on tau neutrino beam in those future tau neutrino projects. The origin of tau neutrino beam is Ds meson decay to tau,  $D_s \rightarrow \tau + \nu_\tau$ , and the cascade decay of the tau,  $\tau \rightarrow x + \nu_\tau$ . DsTau will measure a Ds production differential cross-section in proton and tungsten interactions and this will reduce the systematical error of tau neutrino beam to 10% from 50%. The peculiar Ds cascade decay topology ("double kink") in a few mm range will be detected by Nuclear Emulsion tracker thanks to its excellent spatial resolution (~50nm).

In 2016 and 2017, we made test beam exposures of Nuclear Emulsion modules to the CERN SPS 400GeV/c proton beam. A pilot run in August 2018 and physics run in 2021 are planned.

In this talk, the analysis status and prospects of the DsTau project will be presented with a future tau neutrino project SHiP.

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