

## Study of tau-neutrino production at the CERN SPS

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At the CERN SPS, the DsTau project has been proposed to study tau-neutrino production aiming at providing important information for future  $\nu_\tau$  measurements. Precise measurement of the  $\nu_\tau$  cross section would enable a search for new physics effects in  $\nu_\tau$ -nucleon CC interactions. It also has practical implications for neutrino oscillation experiments. The dominant source of  $\nu_\tau$  is the sequential decay of  $D_s$  mesons produced by proton interactions, whose uncertainty dominates current uncertainty in the  $\nu_\tau$  cross section measurement. The project aims at reducing the systematic uncertainty from about 50% to 10% by measuring the  $D_s$  differential production cross section. For this purpose, emulsion detectors with a nanometre-precision readout will be used to detect small kinks of the  $D_s \rightarrow \tau$  decay. An emulsion detector has a position resolution of 50 nm, allowing for the detection of  $D_s \rightarrow \tau \rightarrow X$  double kinks in a few mm range. Results from the beam tests in 2016-2017 will be presented together with a prospect for a pilot run in 2018 and a physics run in 2021.

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