EPS-HEP2019



Contribution ID: 52

Type: Poster

Study of tau-neutrino production at the CERN SPS

Monday 15 July 2019 18:30 (1h 30m)

DsTau is a project which has been proposed at the CERN SPS to study tau-neutrino production aiming at providing important data for future ν_{τ} studies. A precise measurement of the ν_{τ} cross section would enable a search for new physics effects in ν_{τ} CC interactions. It also has practical importance for the next generation experiments for neutrino oscillation studies and astrophysical ν_{τ} observations. The practical way of producing a ν_{τ} beam is by the sequential decay of D_s mesons produced in high-energy proton interactions. However, there is no experimental measurement of the D_s differential production cross section in fixed target experiments using proton beams, which leads to a large systematic uncertainty on the ν_{τ} flux estimation. The DsTau project aims to reduce the systematic uncertainty in the current ν_{τ} cross section measurement to 10% or below, by measuring the D_s differential production cross section (especially longitudinal dependence). For this purpose, emulsion detectors with spatial resolution of 50 nm will be used allowing the detection of $D_s \rightarrow \tau \rightarrow X$ double kinks in a few mm range. During the physics run, 2.3×10^8 proton interactions will be collected in the tungsten target, and 1000 $D_s \rightarrow \tau$ decays are expected to be detected. Results from the pilot run in 2018 will be presented together with a prospect for physics runs in 2021 and 2022.

Primary authors: Dr ARIGA, Akitaka (Universitaet Bern (CH)); ARIGA, Tomoko (Kyushu University)
Presenter: ARIGA, Tomoko (Kyushu University)
Session Classification: Wine & Cheese Poster Session

Track Classification: Neutrino Physics