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DsTau (NA65): Study of tau neutrino production at CERN-SPS

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DsTau (NA65) at the CERN-SPS is a recently approved experiment, which aims to study the tau neutrino production. The main source of tau neutrinos is the decay of Ds mesons, namely Ds $\longrightarrow \tau\nu\tau$ and then $\tau \longrightarrow \nu\tau X$. There is almost no data on the differential production cross section of Ds in proton-nucleus interactions, which leads to a large uncertainty of tau neutrino cross section measurements preventing a precise test of lepton universality in neutrino scattering.. DsTau addresses this issue and will provide essential inputs for future tau neutrino experiments. A large amount of charmed particles decay events (~ 10^5) is expected to be detected as well, providing a possibility for interesting by-product studies, in particular a search for intrinsic charm in a proton. The experimental method is based on a use of high resolution emulsion detectors for effective registration of events with short lived particle decays. Here I present the motivation of the study, details of the experimental technique, the first results of the analysis of the data collected during test runs and my personal contribution to the analysis

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