

Study of proton-nucleus interactions with the DsTau/NA65 experiment at the CERN-SPS

The DsTau (NA65) experiment at CERN was proposed to measure an inclusive differential cross-section of production, and its decay branching ratios in p-A interactions. The DsTau detector is based on the nuclear emulsion technique providing an excellent spatial resolution for detecting short-lived particles like charmed hadrons. The first results of the analysis of the pilot-run data are presented. The accuracy of the proton interaction vertex reconstruction is reported. A high precision in vertex reconstruction allows one to measure the proton interaction length and charged particle multiplicities accurately in a high-track density environment. The measured data have been compared with several Monte Carlo event generators in terms of multiplicity and angular distribution of charged particles. The proton interaction length in tungsten is measured to be mm. The predictions of KNO-G scaling are tested on the multiplicity distribution in p-A interactions. The results presented in this study can be used to validate event generators of p-A interactions.

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