

DIS 2015

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Deep-Inelastic Scattering and
Related Subjects

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Neutrino scattering physics with the SHIP Experiment

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SHIP is a new general purpose fixed target facility, proposed at the CERN SPS accelerator.

In its initial phase the 400GeV proton beam will be dumped on a heavy target with the aim of integrating 2×10^{20} pot in 5 years.

A dedicated detector downstream the target will allow to probe a variety of models with light long-lived exotic particles and masses below $O(10) \text{ GeV}/c^2$

Another dedicated detector will allow the study of active neutrino cross-sections and angular distributions, and this will be the focus of the talk.

In particular tau neutrino deep inelastic cross sections will be performed with a statistics 1000 times larger than currently available, with the extraction of the F_4 and F_5 structure functions, never measured so far. Tau neutrinos will be distinguished by tau anti-neutrinos, thus providing the first observation for the tau anti-neutrino.

With muon neutrinos it will be possible to study the strange content of the nucleon with a statistics 100 times larger than currently available

Eventually with electron neutrinos it will be possible to improve the deep inelastic cross section measurement, in particular at high energy, where present measurements have large uncertainties.

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