

Momentum measurement in the FASER ν detector in the LHC-FASER experiment

Tuesday, June 18, 2024 5:30 PM (2 hours)

The FASER experiment studies three generations of neutrinos in the unexplored TeV energy region using the Large Hadron Collider at center-of-mass energy of 13.6 TeV.

The FASER detector is located 480 m downstream the ATLAS IP.

The FASER ν emulsion detector, a component of FASER, consists of 730 layers of emulsion films and tungsten plates, with a target mass of 1.1 tons.

Thanks to the high spatial resolution of the emulsion detector, FASER ν can detect all neutrino flavors and measure differential cross-sections.

The objective of this work presented here is to develop a method to reconstruct momenta of high-energy charged particles in the FASER ν detector by means of the multiple Coulomb scattering.

In this poster, we will report on the evaluation results from Monte Carlo simulations, the status of irradiation and analysis in a test beam experiment in summer 2023, and an application of the method to FASER ν 's 2022 data.

Poster prize

Yes

Given name

Haruhi

Surname

Fujimori

First affiliation

Chiba University

Second affiliation

Institutional email

23wm2112@student.gs.chiba-u.jp

Gender

Male

Collaboration (if any)

FASER Collaboration

Primary author: FUJIMORI, Haruhi

Presenter: FUJIMORI, Haruhi

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