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Measuring cross-sections of high-energy neutrinos with FASERnu at the LHC

Friday, 19 February 2021 10:00 (20 minutes)

FASERnu is a new experiment to measure interaction cross-sections of neutrinos that are produced in proton-proton collisions at the LHC. The detector will be installed 480 m downstream from the interaction point of the ATLAS experiment during 2021, aiming to collect physics data during Run 3 of the LHC. About 10,000 charged-current neutrino interactions with mean energies of ~ 1 TeV are expected in FASERnu. There are no existing neutrino cross-section measurements in this energy range. In addition, the measurement will reduce systematic errors on the forward charm production rate and constrain the prompt atmospheric neutrino background for the extragalactic neutrino searches at IceCube. FASERnu can detect interactions of all three neutrino flavors with the excellent track reconstruction capability, utilizing the emulsion detector in cooperation with the silicon tracking in FASER behind it. In this talk, the physics prospects for FASERnu as well as status of the detector construction and installation will be presented.

Collaboration name

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