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Neutrino physics at FASER

The FASER is a compact experiment at the LHC, located 480 m downstream of the ATLAS interaction point along the LHC beamline. It aims to study light, weakly interacting particles produced in the proton collisions at the LHC in the forward region, including exotic particles such as dark photons predicted by some Beyond-the Standard-Model (BSM) models, as well as high energy neutrinos. By detecting for the first time collider-produced neutrinos FASER has opened a new window for neutrino physics in the previously unexplored TeV energy range. Using its emulsion-based sub-detector and electronic components, FASER can observe neutrinos of all three flavors originated from proton-proton collisions.

This talk will present the status of the FASER project, a description of the detector, preliminary results of the LHC Run 3, and future prospects for the high luminosity Run 4, with an emphasis on the experiment's contribution to TeV scale neutrino physics.

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