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FASER Detector and First Physics Results

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FASER is an experiment dedicated to searching for light, extremely weakly-interacting particles that are produced in the very forward direction of high-energy pp collisions at CERN's Large Hadron Collider (LHC). The detector is placed 480 m downstream of the ATLAS interaction point, aligned with the beam collisions axis, and consists of both active electronic components intended to search for BSM physics and a passive tungsten emulsion target intended for neutrino physics. This talk will focus on giving an overview of the FASER detector and will also present our first physics results using a dataset collected at center-of-mass energy $\sqrt{s} = 13.6$ TeV in 2022 during LHC Run 3, where we were the first to directly observe neutrino interactions at a particle collider experiment and also probed previously unconstrained phase space of the dark photon with couplings $10^{-5} - 10^{-4}$ and masses ~ 10 MeV - 100 MeV.

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