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The Forward Liquid Argon Experiment at the Forward Physics Facility for High Energy Neutrino and Dark Matter Searches at LHC.

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The proposed Forward Physics Facility (FPF) is an underground cavern at zero degrees to IP1 with the space and infrastructure to support a suite of far-forward experiments at the Large Hadron Collider in the High Luminosity era (HL-LHC). The Forward Liquid Argon Experiment (FLArE) is a Liquid Argon Time Projection Chamber (LArTPC) based detector designed for very high-energy neutrinos and search of dark matter in FPF, 620 m from the ATLAS interaction point in the far-forward direction. With a fiducial mass of 10 ton, FLArE will detect millions of neutrinos at the highest energies ever detected from a human source and will also search for Dark Matter particles with world-leading sensitivity in the MeV to GeV mass range. The LArTPC technology used in FLArE is well-studied for neutrino and dark matter experiments, however the use at the LHC requires specific targeted R&D. It offers excellent spatial resolution and particle identification. In this talk, I will overview the physics reach, the preliminary design, the needed detector R&D, and the prospects for international sponsors.

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