

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

Friday 25 August 2023 11:36 (18 minutes)

The Forward Physics Facility (FPF) is a proposed program to build an underground cavern with the space and infrastructure to support a suite of far-forward experiments at the Large Hadron Collider during the High Luminosity era (HL-LHC). The Forward Liquid Argon Experiment (FLArE) is a Liquid Argon Time Projection Chamber (LArTPC) based experiment designed to detect very high-energy neutrinos and search for dark matter in FPF, 620 m from the ATLAS interaction point in the far-forward direction, and will collect data during HL-LHC. With a fiducial mass of 10 tonnes, 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. It offers excellent spatial resolution and allows excellent identification of individual particles. In this talk, I will overview the physics reach, preliminary design, and status of FPF and FLArE.

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Session Classification: parallel (room#103)

Track Classification: WG3: Accelerator Physics