

Simulation of MAPP-1 Detector

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The Standard Model (SM) of particle physics, though highly successful, is incomplete. It fails to explain phenomena such as matter-antimatter asymmetry and the nature of dark matter (DM). Extensions to the SM, such as the Dark Sector model, introduce new physics, including feebly interacting particles like millicharged particles (mCPs) that may provide insight into these phenomena. The Monopole and Exotics Detector at the LHC (MoEDAL) experiment at CERN is the first dedicated experiment focused on searching for unconventional signatures of new physics, including these exotic particles. The newly proposed MAPP-1 detector aims to enhance this search by targeting mCPs. It leverages advanced GEANT4 simulations to optimize its design and response for maximum sensitivity. This talk will present the MAPP-1 detector's design, simulation framework, and its potential to uncover evidence of new physics.

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