

Direct measurement of dipole moments of short-lived particles at the LHC: advancements and prospects

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A pioneering fixed-target experiment is proposed for the LHC, aimed at measuring the dipole moments of charm baryons and potentially the tau lepton. Leveraging particle channeling and spin precession in bent crystals, the experiment offers a novel approach to probe these elusive properties. The detector system comprises a high-precision spectrometer for charged particle momentum measurement and a Cherenkov detector for particle identification. The tracking system features state-of-the-art silicon pixel sensors from the LHCb VELO detector, strategically positioned inside Roman Pot stations, in tandem with a dipole magnet. The R&D is quite advanced, including simulation studies to optimise the detector design and the sensitivity to dipole moments. A proof-of-principle test is planned during the LHC Run3. This presentation will highlight the latest progress, advancements, and the physics perspectives of the proposed experiment.

Alternate track

1. Quark and Lepton Flavour Physics

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