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The ALADDIN experiment at LHC

ALADDIN (An Lhc Apparatus for Direct Dipole moments INvestigation) is a new proposed compact fixed-target experiment at the LHC, which will enable a unique program of measurements of charm baryon electromagnetic dipole moments. The experiment relies on an innovative storage-ring layout capable of deflecting protons from the beam halo towards a solid target paired to a bent crystal where forward-boosted charm baryons are produced and channelled. Exploiting the spin precession induced by the channelling phenomena in the bent crystal, the magnetic and electric dipole moments can be measured by analysing the polarisation of the decaying charm baryons. The ALADDIN apparatus features a 4.4 m long spectrometer and a 5.0 m long RICH detector for particle identification, which could be installed at the LHC Insertion Region 3, without civil engineering and with minimal impact on the LHC machine operations, during the Long Shutdown 3 to start data taking in Run4. A proof-of-principle test at the LHC, named TWOCRYST, is currently under way to demonstrate the feasibility of the proposed experiment in 2025. The Letter Of Intent of the experiment has been submitted to the LHCC (https://cds.cern.ch/record/2905467) and the LHCC has approved the collaboration to write a technical proposal in 2025.

Secondary track

T11 - Detectors

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