

Magnetic and electric dipole moments of short-lived particles and proposal for their measurements with bent crystals at CERN

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We discuss theoretical basis for measurement of magnetic and electric dipole moments (MDM and EDM) of short-lived particles at the LHC by using bent crystals. In particular, measurement of these dipole moments for the charmed baryons Λ_{c} and Ξ_{c} would allow one to directly obtain information on MDM and EDM of the charm quark. This can be demonstrated in a constituent quark model. The idea of measurement of MDM/EDM is based on the phenomenon of spin precession of a channeling particle which moves in a strong electric field of a bent crystal. Theoretical formalism is briefly reviewed. Some elements of the proposal at CERN are also addressed.

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