

Measurements of Electric Dipole Moments of Charged Particles at Storage Rings

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Electric Dipole Moments (EDM) of elementary particles are considered to be one of the most powerful tools to investigate CP violation beyond the Standard Model and to find an explanation for the dominance of matter over anti-matter in our Universe.

Up to now experiments concentrated on neutral systems (neutrons, atoms, molecules). Storage rings offer the possibility to measure EDMs of charged particles by observing the influence of the EDM on the spin motion. The Cooler Synchrotron COSY at the Forschungszentrum Jülich provides polarized protons and deuterons up to a momentum of 3.7 GeV/c and is thus an ideal starting

point for such an experimental program. The JEDI (Jülich Electric Dipole moment Investigations) Collaboration has been formed to exploit the COSY facility to demonstrate the feasibility of such a measurement and to perform all the necessary investigations towards the design of a dedicated storage ring.

The plans for measurements of charged hadron EDMs at COSY and results of the first test measurements will be presented.

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