

Project Overview and Status of Charged Particle EDM Searches in Storage Rings

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Permanent EDMs (electric dipole moment) of fundamental particles violate both time invariance \mathcal{T} and parity \mathcal{P} . Assuming the CPT theorem this implies CP violation. The Standard Model predicts non-vanishing EDMs, their magnitudes, however, are expected to be unobservably small with current techniques. Hence, the discovery of a non-zero EDM would be a signal for "new physics".

As a first step towards EDM searches of charged particles in storage rings, R&D work at the Cooler Synchrotron COSY is pursued. Subsequently, a first direct EDM measurement of a charged particle will be performed at COSY, and, on a longer time scale, the design and construction of a dedicated storage ring will be carried out.