

# Results of Test Measurements for Storage Ring Electric Dipole Moment Experiments

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on behalf of the JEDI collaboration

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One of the three conditions shown by Sakharov in 1967 for Baryogenesis is C-symmetry and CP-symmetry violation. The main goal of the JEDI collaboration (Juelich Electric Dipole moment Investigations) is to find a T(equivalent CP)-violating electric dipole moment (EDM) of charged hadrons. COSY (COoler SYNchrotron) at Forschungszentrum Juelich is an ideal facility to perform feasibility studies regarding to a final ring where EDMs could be detected. At present two important requirements are under investigation:

1. The spin coherence time (SCT) describes the polarization loss in the horizontal plane due to tiny differences of the particle momenta. It has been observed that the SCT could be enlarged to several hundred seconds, which is crucial for the stastical sensitivity of the final measurement.
2. The spin tune  $\nu_S$  is defined as the spin rotations during one particle turn around the ring. In first order the spin tune is given by  $\nu_S \approx \gamma G$ . Imperfections and misalignments of the magnets yields to values slightly different. At COSY  $\nu_S$  can be measured with a precision of  $10^{-10}$  and provides a tool to investigate systematic effects.

The talk will explain the methods how the SCT has been increased and how the spin tune was determined with a precision to  $10^{-10}$  during a one hundred seconds accelerator cycle.