

Contribution submission to the conference Dresden 2014

A RF-E-B-Dipole for Spin Manipulation at COSY —

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Permanent EDMs (Electric Dipole Moments) of fundamental particles violate both time invariance and parity and thus, according to the CPT theorem, imply CP violation. The standard model prediction for the EDM gives unobservably small magnitudes, therefore any measurement of non-vanishing EDMs would be a signature of “new physics”.

The JEDI Collaboration investigates the feasibility of EDM experiments with charged hadrons in dedicated storage rings. They incorporate measurements with horizontally polarized particles. To maximize the lifetime of the horizontal polarization, systematic studies of unwanted spin rotations utilizing for instance a vertical RF-B field are required. To avoid kicking the beam in the horizontal plane, the resulting Lorentz force needs to be compensated by the force of an orthogonal electric field, leading to a Wien-Filter configuration. For preliminary studies, the Cooler Synchrotron COSY is currently being supplemented with a new RF-E-B-Dipole.

The talk will incorporate the setup of the new system from the RF-Supply to the electrode and coil configuration providing the electromagnetic fields, as well as the commissioning and first measurements taken at COSY.

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Topic: Strahldynamik und el. mag. Felder; beam dynamics and el. mag. fields
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