

Contribution submission to the conference Würzburg 2018

Search for Electric Dipole Moments at COSY in Jülich - Closed-Orbit and Spin Tracking Simulations — ●VERA SCHMIDT^{1,2} and ANDREAS LEHRACH^{1,2} — ¹Forschungszentrum Jülich, IKP-4, Jülich, Deutschland — ²III. Physikalisches Institut B, RWTH Aachen University, Aachen, Deutschland

The observed matter-antimatter asymmetry in the universe cannot be explained by the Standard Model (SM) of particle physics. In order to resolve the matter dominance an additional \mathcal{CP} violating phenomenon is needed. A candidate for physics beyond the SM is a non-vanishing Electric Dipole Moment (EDM) of subatomic particles. Since permanent EDMs violate parity and time reversal symmetries, they are also \mathcal{CP} violating if the \mathcal{CPT} -theorem is assumed.

The JEDI (Jülich Electric Dipole moment Investigations) collaboration in Jülich is preparing a direct EDM measurement of protons and deuterons first at the storage ring COSY (COoler SYnchrotron) and later at a dedicated storage ring.

Ensuring a precise measurement, various beam and spin manipulating effects have to be considered and investigated. Therefore closed orbit and spin tracking simulations are performed in order to quantify the effect of systematics on the EDM measurement and to predict the accuracy of the experiment. The EDM measurement method, as well as simulation results will be presented.

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