

Realistic Fields And Its Gradients Effects On Systematics In The Search Of Electric Dipole Moment With The Storage Ring

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The JEDI collaboration attempts to measure for first time EDM for proton and deuteron using storage ring and the precursor experiment will be performed soon. The goal precision level with new dedicated storage ring is 10^{-29} e-cm so it is necessary to pay attention to various effects which could mimic the EDM signal. The elements of the storage ring have complicated field distributions, hence fields gradients are also present. Therefore, magnetic dipole moment (MDM) and electric quadrupole moment (EQM) interaction with fields and its gradients must be considered. Hence, BMAD software was modified implementing particles tracking in custom defined elements (dipole, wien filter, quadrupole) using realistic fields and extending T-BMT equation with fields derivatives. Preliminary calculations of spin precession with fields gradients effects included will be presented for the quasi-frozen spin method.