

Status of the Storage Ring Proton EDM Experiment

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Charged particle EDM experiments can be done with high sensitivity using storage rings. Radial electric fields bend a longitudinally polarized beam for storage while at the same time couple with the particle EDM. Having the so-called magic momentum, the spin precession in the horizontal plane can be frozen. Still, the spin can make a precession in the vertical plane with a rate proportional to the magnitude of the EDM (d_p).

We have a preliminary ring design to make the proton EDM experiment with a sensitivity of $d_p = 10^{-29}$ e·cm. The EDM signal corresponds to a few nrad/s of spin precession rate in the vertical plane. There are several spin and electromagnetic field configurations that can lead to a false EDM signal of the same order, like a net radial magnetic field and/or vertical electric field depending on the details of the ring lattice. This talk summarizes the ring design with a focus on the systematic errors.

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