

Status of the Storage Ring Proton EDM Experiment

Tuesday, 29 May 2018 17:10 (20 minutes)

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 $d_p = 10^{-29} e\cdot\text{cm}$. 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.

E-mail

selcuk@ibs.re.kr

Primary author: HACIOMEROGLU, Selcuk (Institute for Basic Science, Korea)

Co-author: SEMERTZIDIS, Yannis K. (Institute for Basic Science)

Presenter: HACIOMEROGLU, Selcuk (Institute for Basic Science, Korea)

Session Classification: Tests of Symmetries and the Electroweak Interaction

Track Classification: TSEI