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Storage ring proton EDM experiment and some systematic error studies

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Storage ring proton EDM experiment aims to search for 10^{-29} e·cm sensitivity. The experiment is designed for two polarized counter-rotating beams to be stored at magic momentum inside an all-electric ring for 1000 seconds, and 10^4 injections. Simulations show that some ring designs easily lead to 1000 seconds of spin coherence time. Besides, the magnetic field as well as the geometric phase effect does not seem to be an issue. On the other hand, radial and vertical DC magnetic field can be measured to fT level making use of the beam dynamics and SQUID-based BPMs.

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