

Abstract Submitted  
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**Proposed Searches for Electric Dipole Moments of the Muon, Deuteron and Proton in Storage Rings** YANNIS SEMERTZIDIS, Brookhaven National Laboratory, STORAGE RING EDM COLLABORATION — We will describe a new, highly-sensitive method of probing for electric dipole moments (EDM) on charged particles, such as muons, deuterons, and protons in magnetic storage rings. These techniques utilize the strong electric fields present in the particle's rest frame due to relativistic effects. We will discuss the physics reach for a range of sensitivities:  $10^{-27}$  to  $10^{-29}$  e·cm for the deuteron/proton and  $< 10^{-24}$  e·cm for the muon (see also The storage ring EDM collaboration web page). We will compare ring designs that (a) cancel the precession of the anomalous magnetic moment using electric fields and (b) accumulate an EDM precession using a resonance between the anomalous precession and synchrotron oscillations. The mere existence of an EDM for a fundamental particle at these levels would imply a new source of CP-violation that is several orders of magnitude above Standard Model predictions but within the range of speculative models containing new physics.

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