

Search for the muon EDM using the frozen-spin technique in a compact solenoid

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Electric dipole moments (EDM) of non-degenerate systems with angular momentum violate parity and time symmetry, and by the virtue of the CPT-theorem also the combined symmetry of charge and parity (CP). Although CP violation (CPV) is an established ingredient of the weak sector of the standard model of particle physics (SM), its contribution to an EDM of a fundamental particle is too small to be measured any time soon. Therefore, any discovery of an EDM would be a genuine signal of yet unobserved physics. As the muon is the only accessible probe of the second generation of fermions and the only fermion of which the EDM can be measured on the bare particle, a search for a muon EDM thus uniquely complements more established searches using atoms and neutrons. I will report on the status of a search for the muon EDM using the frozen-spin technique in a compact solenoid, aiming for an improvement by three orders of magnitude in sensitivity compared to the current best direct limit $d \leq 1.8 \times 10^{-19}$ e·cm.