

The search for the muon EDM at the Fermilab $g - 2$ experiment and beyond

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The observation of a non-zero permanent electric dipole moment (EDM) of an elementary particle would break both parity and time-reversal symmetries, implying the violation of charge-parity (CP) symmetry under CPT invariance. The Standard Model (SM) predicts subatomic particle EDMs which are so small as to be out of reach of current experiments, such that any observation of a non-zero EDM would indicate a source of CP violation arising from new physics beyond the SM (BSM). Presently, a measurement of muon EDM at the Fermilab $g - 2$ experiment is well underway, aiming to exceed the current upper limit – set by the Brookhaven $g - 2$ experiment – by two orders of magnitude at $\sim 10^{-21}$ e-cm; providing a unique opportunity to investigate BSM sources of CP violation in the second generation of leptons. This talk will provide an overview of the muon EDM search at Fermilab, as well as future search experiments.

Attendance type

Virtual presentation

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