

Kick-off workshop for the search of a muon EDM using the frozen spin technique at PSI

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The search of the muon EDM using the frozen spin technique at PSI.

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A permanent EDM of an elementary particle violates parity (P) and time reversal (T) symmetry, and assuming CPT invariance, T violation implies CP violation. EDM predicted by the Standard Model (SM) are far too small to be detected with current experimental techniques, therefore, any observation of non-zero EDMs would strongly indicate the existence of physics beyond the SM (BSM).

The muon is of particular interest and is the only fundamental particle which reasonably allows to measure the EDM directly. The current best upper limit of the μ EDM, $1.8 \times 10^{-19} e \cdot \text{cm}$ (95% C.L.), was obtained parasitically in the “ $(g - 2)$ ” measurement of the muon at Brookhaven. This leaves the muon EDM as one of the least tested areas of the SM.

In my talk I will sketch the ideas and possibilities for a dedicated search of the muon EDM using the frozen spin technique at PSI.

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