

A new international effort to measure the neutron electric dipole moment

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The experimental search for a neutron Electric Dipole Moment (EDM) provides an extremely sensitive probe for CP violating physics beyond the Standard Model. The most precise measurement comes from a PSI based experiment giving an upper bound of 1.8×10^{-26} ecm (90% CL) on the neutron EDM, by measuring spin precession of ultracold neutrons generated from a solid deuterium source and stored in a room temperature measurement cell. A follow-on experiment at PSI (n2EDM) is currently seeking to improve the neutron EDM sensitivity to the 10^{-27} ecm level using dual precession cells, and there are also several other experiments in America and Europe using similar methods with similar sensitivity goals. Pushing to sensitivity beyond this level will require a different technique and likely also consolidation of the various neutron EDM efforts. There is an emerging international collaboration (nEDMSF) seeking to build a new neutron EDM experiment in Europe based on in-situ ultracold neutron production and measurement in superfluid helium capable of reaching 10^{-28} ecm sensitivity. In this talk I will describe the current neutron EDM experimental landscape and then discuss the future nEDMSF experiment.

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