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The search for an electric dipole moment of the neutron at PSI

Searches for electric dipole moments (EDM) of fundamental particles are considered to be one of the most sensitive approaches to physics beyond the Standard Model (SM) of particle physics. A non-SM mechanism that violates the combined symmetry of charge conjugation and parity inversion (CP-violation) could help to explain the huge discrepancy between the observed and predicted baryon asymmetry of the Universe. The discovery of an EDM of the neutron (nEDM) would indicate a violation of time reversal symmetry (T) and, assuming CPT invariance, CP-violation. No nEDM has yet been observed, while the current best upper limit $d_n < 2.9 \times 10^{-26}$ ecm (90% C.L.) [Baker et al. PRL(2006)131801] was published in 2006. At the Paul Scherrer Institute (PSI) in Villigen, Switzerland a measurement of the nEDM is presently running with the highest daily sensitivity ever obtained.
In this talk I will discuss the principal experimental techniques, recent advances in sensitivity, and plans for future upgrades.

Summary

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