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

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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.

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