

The n2EDM experiment searching for a neutron electric dipole moment

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Searches for permanent electric dipole moments (EDM) of fundamental particles and systems are among the most sensitive probes for CP violation beyond the Standard Model, which is required in order to explain the baryon asymmetry of the Universe. The current limit on the EDM of the neutron is set by our collaboration, $|d_n| < 1.8 \times 10^{-26}$ ecm (C.L. 90%) in the nEDM experiment [1]. Presently, a next-generation apparatus - n2EDM - is in the commissioning phase at the ultracold neutron source at the Paul Scherrer Institute (PSI) with the aim of improving the sensitivity by an order of magnitude with provision for further substantial improvements. This presentation will provide an overview of the experiment as well as the commissioning status of the apparatus. Focusing on the most recent progress, we will in particular report on the characterization and optimization of the magnetic environment of the central part of the apparatus, which is a crucial condition to achieve the desired sensitivity.

[1] C. Abel et al., Phys. Rev. Lett. 124 (2020), 081803