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The search for the neutron electric dipole moment at the Paul Scherrer Institut

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The measurement of the neutron electric dipole moment (nEDM) constrains the contribution of CP-violating terms within both the standard model and its extensions. The limit, or even the observation of an EDM would also add profoundly to the understanding of the baryon-asymmetry of the universe.
The experiment set up at the Paul Scherrer Institut (PSI), Switzerland, uses ultra-cold neutrons (UCN) stored in vacuum at room temperature. This technique provided all previous limits including the last (and best) one by the RAL/Sussex/ILL collaboration in 2006: dn<2.9 10-26 e cm (90% C.L.). We aim at improving the experimental sensitivity by a factor of 5 within 2-3 years, using an upgrade of the same apparatus. We will take advantage of the increased ultra cold neutrons density at PSI and of a new concept including both, an external magnetometry and a co-magnetometer.
In parallel, a next generation apparatus with two UCN storage chambers and elaborate magnetic field control is being designed aiming at another order of magnitude increase in sensitivity, allowing to put a limit as tight as dn<5 10-28 e cm if not establishing a finite value.
The status of both projects will be given.

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