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Overview and status of the PanEDM experiment at ILL

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Searches for permanent electric dipole moments (EDMs) provide important results to constrain model parameters and promising experiments to potentially reveal beyond Standard Model (SM) physics. A non-zero EDM is a direct manifestation of time-reversal (T) violation, and, equivalently, violation of the combined operation of charge-conjugation (C) and parity inversion (P). Identifying new sources of CP violation can help to solve fundamental puzzles of the SM, e.g. the observed baryon-asymmetry in the Universe.
The PanEDM experiment's goal is to measure the EDM of the neutron with a sensitivity at least one order of magnitude below the current best limit of d_n<1.8e-26 ecm (90% C.L.). Located at the new ultra-cold neutron (UCN) source SuperSUN at ILL PanEDM will greatly benefit from high UCN densities with UCN energies below 80 neV. A statistical neutron EDM sensitivity of 3.8e-27 ecm is expected within 100 measurement days with SuperSUN phase-I. With future phase-II improvements in SuperSUN and the PanEDM apparatus an ultimate statistical sensitivity of 7.9e-28 ecm is anticipated.
The already commissioned passive magnetic shield provides highly stable magnetic fields with drifts <10fT over 250s and magnetic field gradient drifts <10fT/m/s, strongly suppressing major systematic effects. Other subsystems addressing systematic effects are being commissioned, e.g. external Hg magnetometer cells, an all-optical Cs magnetometer array and the high-voltage system including a leakage current monitor.
In this presentation I will give an overview of ILL's new UCN source SuperSUN, the PanEDM experiment and its main components and a status report on recent progress including results from ongoing commissioning of SuperSUN.

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