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Minimizing Magnetic Dipole Contamination in the n2EDM Experiment

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The n2EDM experiment searching for the neutron electric dipole moment is currently being commissioned at PSI. Essential for a tenfold sensitivity improvement relative to the current best result is a uniform magnetic field ($\sigma(B_z) < 170\text{pT}$). Any localized magnetic contamination of the apparatus may result in a systematic error of the measurement.

Parts in the direct vicinity of the neutron precession chambers need to be non-magnetic at a level of a few pT at 5cm distance from the surface. Therefore, the collaboration has built a new high-sensitivity gradiometer using laser-pumped caesium magnetometers to qualify all parts installed in the experiment. The poster will present the new device and first measurements.

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