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The magnetometer system planned for the neutron electric dipole moment (nEDM) experiment at LANL[1] YI CHEN, CHEN-YU LIU, Indiana University, NEDM@LANL COLLABORATION — The nEDM experiment at Los Alamos National Laboratory (LANL), with its upgraded ultracold neutron source, aims to improve this measurement to $3.0\times10^{-27}e\cdot cm$, which is an order of magnitude smaller than the current best limit. In controlling the magnetic field background to achieve this sensitivity, we plan to implement mercury (Hg^{199})—both as the co-magnetometer and as an external magnetometer. The latter would be the first implementation of its kind for nEDM applications. I will describe the state-of-the-art techniques to instrument these magnetometers, including the laser system to polarize and detect the spin-dependent interactions and the making of these highly specialized optical cells to contain the mercury vapors.

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