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Characterization of the new Ultracold Neutron beamline at the LANL UCN facility

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The neutron electric dipole moment (nEDM) experiment that is currently being developed at Los Alamos National Laboratory (LANL) will use ultracold neutrons (UCNs) and Ramsey's method of separated oscillatory fields to search for a nEDM. We present measurements of UCN storage and UCN transport during the commissioning of a new beamline at the LANL UCN source and demonstrate a sufficient number of stored polarized UCNs to achieve a statistical uncertainty of $\delta d_n = 2 \times 10^{-27}\ e \cdot \text{cm}$. We also present an analytical model describing data that provides a simple parameterization of the input UCN energy spectrum on the new beamline.

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