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An Ultracold Neutron Turntable Switcher for the LANL nEDM Experiment JACKSON HEISE, Valparaiso Univ, LANL NEDM COLLABORATION — The goal of a new nEDM experiment at Los Alamos National Laboratory (LANL) is to measure the neutron's electric dipole moment (nEDM) with 1-sigma sensitivity ˜3x10-27 e * cm. The experiment will make use of the Ramsey method of separated oscillatory magnetic field pulses to determine the value of the neutron's precession frequency with a strong electric field applied parallel or antiparallel to the holding field. The change in this precession frequency can then be used to calculate the nEDM. In the experiment, ultra-cold neutrons (UCNs) travel from the LANL UCN source via guides into a chamber, where the Ramsey magnetic field pulses are applied. The chamber is then unloaded into a detector that measures the polarization of the neutrons. A turntable switcher was constructed to form connections between the source, Ramsey field chamber, and detector. Controlled by a rotary motor, the switcher turns to orient guide pipe sections, first connecting the source to the precession chamber inside a magnetically shielded room, and then to connect the precession chamber to the detector for spin analysis. Discussion of switcher assembly, as well as results of switcher configuration, will be presented.

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