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Progress towards a permanent electron electric dipole moment search using cold atoms in an optical lattice NEAL E. SOLMEYER, KUN-YAN ZHU, DAVID S. WEISS, Penn State Physics Dept. — Observation of a permanent electric dipole moment of the electron would imply CP violating effects not contained in the Standard Model. We present our progress towards measuring the electron EDM using laser-cooled cesium and rubidium atoms trapped in a one dimensional optical lattice. We have collected Cs atoms in a MOT and have launched them 90 cm vertically using two cavity-enhanced optical lattice guides. In that region, which is suitable for measurement, we re-cooled and re-trapped the atoms with an overall transfer efficiency from the MOT of 50%. The two 1D lattice traps thread through three specially-coated glass electric field plates. Very low frequency Ramsey-like spectroscopy will be sensitive to an EDM with an ultimate precision of 3×10^{-30} e-cm.

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