

Abstract Submitted
for the DAMOP17 Meeting of
The American Physical Society

Measurement of parity non-conservation in cesium using two-pathway coherent control¹ YAO DE GEORGE TOH, JUNGU CHOI, DANIEL ELLIOTT, Purdue Univ — Atomic parity violation measurements provide a way to probe physics beyond the Standard Model. They can provide constraints on conjectures of a massive Z' boson or a light boson, or searches of dark energy. Using the two-pathway coherent control techniques developed by our group, we plan a new measurement of E_{PNC} on the cesium $6S \rightarrow 7S$ transition. We coherently interfere a 2-photon transition with the Stark and PNC transition to amplify and extract the PNC amplitude. This should result in much smaller systematic effects as compared to those of previous measurements of E_{PNC} . Previously, we have measured the magnetic dipole transition moment on the same $6S \rightarrow 7S$ transition to about 0.4% uncertainty. We discuss improvements made to the system to date and our plans for further upgrades towards an E_{PNC} measurement. Key systematics and how we plan to overcome them will also be detailed.

¹NSF Grant: PHY-1607603

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Date submitted: 25 Jan 2017

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