

Abstract Submitted
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The Search for a Permanent Electric Dipole Moment of ^{199}Hg W. C. GRIFFITH, M. D. SWALLOWS, L. K. KOGLER, E. N. FORTSON, University of Washington, M. V. ROMALIS, Princeton University — We will report on the search for a permanent electric dipole moment (EDM) of ^{199}Hg . The existence of a nonzero EDM would imply a source of CP violation beyond the standard model. The present limit on the EDM of ^{199}Hg is $|d(^{199}\text{Hg})| < 2.1 \times 10^{-28} e \text{ cm}$.¹ In that work, two quartz vapor cells containing polarized Hg vapor were placed in parallel magnetic and anti-parallel electric fields, and the spin precession frequencies were determined using an optical technique. An improved version of that experiment incorporates two additional Hg vapor cells that have no applied electric field. The new cells serve as magnetometers, cancelling noise due to magnetic field gradient fluctuations and providing an additional check on systematic effects. Our present efforts are focused on understanding the origin of a significant systematic effect that has led to spurious EDM-like signals. We will also discuss our measurement of a linear Stark interference effect that is a possible systematic for the EDM experiment (see other abstract, this meeting). Current results will be presented.

¹M. V. Romalis, W. C. Griffith, J. P. Jacobs, and E. N. Fortson, Phys. Rev. Lett. **86**, 2505 (2001).

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