

“Search for Permanent Electric Dipole Moment in Radium Atoms”

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The search for a permanent electric dipole moment (EDM) in an atom is a sensitive test of time-reversal symmetry violation. Under the assumption of the goodness of CPT, this is equivalent to CP violation. In the nuclear sector, the best limit for T-violation through EDMs is set by measurements of the EDM of the neutron and of the diamagnetic atom Hg-199. Collective and mean field calculations suggest that because of the octupole deformation of its nucleus, Ra-225 (a spin $\frac{1}{2}$ diamagnetic atom with a half life of 15 days) would be two to three orders of magnitude more sensitive to underlying T-violating interactions in the nucleus than Hg-199. Our search for a permanent EDM in Ra-225 involves measuring the nuclear spin precession of polarized Ra-225 atoms held in an optical dipole trap. We will report on our progress in building up this experiment.