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**Beyond Schiff Moment: Atomic EDMs from Two-Photon Exchange** SATORU INOUE, University of South Carolina, MICHAEL RAMSEY-MUSOLF, University of Massachusetts Amherst — Atomic electric dipole moment (EDM) searches are some of the most sensitive tests of CP violation. Interpretation of atomic EDM searches requires careful consideration of the Schiff theorem, which states that a neutral system of non-relativistic point charges interacting only electrostatically has zero net EDM. Atomic EDMs arise from breakdowns in the assumptions to the Schiff theorem. Conventionally, leading contributions to EDMs of diamagnetic atoms are thought to be nuclear Schiff moments, which arise due to finite sizes of nuclei. We revisit the argument to derive the Schiff moment contribution to atomic EDMs and find that atomic EDMs can be generated from non-electrostatic interactions, namely 2 successive electron-nucleus interactions involving transverse electric multipoles. We estimate that this contribution can be comparable to the Schiff moment effect.

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