Abstract Submitted
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Measurements of the Ground-State Polarizabilities of Cs, Rb, and K using Atom Interferometry[1] MAXWELL GREGOIRE, IVAN HROMADA, WILLIAM F. HOLMGREN, RAISA TRUBKO, ALEXANDER D. CRONIN, University of Arizona — We measured the ground-state static electric-dipole polarizabilities of Cs, Rb, and K atoms with 0.2% uncertainty using a three-nanograting Mach-Zehnder atom beam interferometer. Since thermal Cs atoms have short de Broglie wavelengths, we developed measurement methods that do not require resolved atom diffraction: we used phase choppers to measure atomic beam velocity distributions, and electric field gradients to induce polarizability-dependent phase shifts. Our measurements provide benchmark tests for atomic structure calculations and thus test the underlying theory used to interpret atomic parity non-conservation experiments.

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