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Atom Interferometry Measurements of Static and Dynamic Polarizability RAISA TRUBKO, WILL HOLMGREN, IVAN HROMADA, JOE RONAN, ALEX CRONIN, University of Arizona — We report progress towards new measurements of static and dynamic polarizabilities for several atomic species. We use a nanograting Mach-Zehnder atom interferometer with an electric field gradient to observe atomic de Broglie wave phase shifts that are proportional to the electric polarizability. These measurements provide tests of atomic structure calculations that are needed to improve the precision of atomic clocks. We explain the progress and challenges of measuring the dynamic polarizability of potassium, the static polarizability of strontium and ytterbium, and several polarizability ratios (e.g. α_{Na}/α_{Li}) with one part per thousand accuracy.

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