

Abstract Submitted  
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**Atom interferometry measurements of the polarizability of Na, K, and Rb** WILLIAM HOLMGREN, MELISSA REVELLE, VINCENT LONIJ, ALEXANDER CRONIN, University of Arizona — We measured the static ground state polarizability of three different atomic species (Na, K, and Rb) using a Mach-Zehnder atom interferometer. We describe how we can achieve an uncertainty of 1% for each of these measurements. The interferometer is produced by atom-wave diffraction from two nanogratings. An electric field gradient across the atom beam paths provides a polarizability dependent phase shift to the atom interference fringes. Since all three polarizability measurements are performed in the same apparatus, we anticipate reporting polarizability ratios with better than 1% precision. We will also discuss the major sources of uncertainty that cannot be canceled by ratio measurements: the beam velocity and velocity spread. This work is supported by the NSF.

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