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Precision Measurements of Tune-out Wavelengths with an Atom Interferometer RAISA TRUBKO, MAXWELL GREGOIRE, ALEXANDER CRONIN, University of Arizona — Tune-out wavelengths occur were there is a root in the dynamic polarizability between two resonances. Precision measurements of tune-out wavelengths serve as a benchmark test for atomic structure calculations of ratios of dipole matrix elements. We present a new measurement of the longest tune-out wavelength in potassium, with a preliminary result of $\lambda_{\text{zero}} = 768.9702(8)$ nm. We describe experimental improvements such as adding an optical cavity that allows us to reach sub-picometer precision. We discuss systematic errors due to broadband laser light and the Earths' rotation. We also show preliminary results for Rb.

Raisa Trubko
University of Arizona

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