

Abstract Submitted
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Decoherence Spectroscopy Theory and Application with an Atom Interferometer RAISA TRUBKO, ALEXANDER CRONIN, University of Arizona
— We developed decoherence spectroscopy as a method to improve the accuracy of a tune-out wavelength (λ_{zero}) measurement made with atom interferometry. Specifically, we used atom interference fringe contrast loss as a function of laser frequency in order to monitor Doppler shifts. This was particularly helpful since we used a multi-pass cavity to recycle laser light in this experiment. The resulting decoherence spectra have non-intuitive features. Therefore we present a theoretical model for decoherence spectroscopy and compare this model to several empirical examples.

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