

Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Using a lens for matter waves in an atom interferometer RAISA TRUBKO, IVAN HROMADA, WILLIAM HOLMGREN, ALEXANDER CRONIN, University of Arizona — We demonstrate the use of a lens for matter waves that increased our interference fringe contrast from 16% to 24%. To create our lens, we used a static electric field gradient inside our three nanograting Mach-Zehnder atom interferometer. We discovered that our lens ($f = -500\text{m}$) can compensate for misalignments, such as imperfect grating period. We explore how the (de)focusing effect can influence our precision measurements of atomic polarizability, and how such a lens can be useful in other layouts such as a Talbot Lau interferometer. We gratefully acknowledge NSF support for this work.

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Date submitted: 26 Jan 2012

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