

Abstract Submitted
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Through-Chip High Numerical Aperture Imaging of a BEC EVAN A. SALIM, SETH C. CALIGA, JONATHAN B. PFEIFFER, DANA Z. ANDERSON, JILA and the University of Colorado — We present a chip based BEC apparatus that gives optical access to an atomic sample with numerical apertures as high as 0.8. We incorporate a window into a silicon chip that forms a wall of the vacuum chamber and makes it possible to place the primary objective of an imaging system as close as 600 microns from the atoms while the lens itself resides outside of the chamber. We show progress on our system, which allows for both high-resolution in-trap imaging of a BEC and projection of an optical potential in proximity of the chip surface with an off-the-shelf microscope objective. The system is designed to enable atom tunneling experiments with the ultimate goal of demonstrating an atom transistor using a triple-well potential.

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