

Abstract Submitted
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Techniques for reconstructing the column-density of a Bose-Einstein condensate from multiple defocused images ABIGAIL PERRY, SEIJI SUGAWA, FRANCISCO SALCES-CARCOBA, IAN SPIELMAN, JQI, NIST, & UMD — We report on an experiment reconstructing the column-density of a Bose-Einstein condensate using differently defocused images from multiple cameras. Starting with defocused images taken off-resonance, a transfer function with a “not-quite invertible” relationship exists, going from the optical depth observed at the camera to the focused column density [L.D. Turner et al., *Opt. Lett.*, 29(3) 232-234 (2004)]. Adding additional defocused detectors allows us to fully reconstruct the focused image, and more advanced techniques allow us to reconstruct both the amplitude and phase of the electromagnetic wave at the image planes.

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