

Abstract Submitted
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Plenoptic Imaging of a Three Dimensional Cold Atom Cloud¹

GORDON LOTT, Air Force Institute of Technology, JOHN BURKE, Air Force Research Laboratory, MICHAEL MARCINIAK, Air Force Institute of Technology — A plenoptic imaging system is capable of sampling the rays of light in a volume, both spatially and angularly, providing information about the three dimensional (3D) volume being imaged. The extraction of the 3D structure of a cold atom cloud is demonstrated, using a single plenoptic camera and a single image. The reconstruction is tested against a reference image and the results discussed along with the capabilities and limitations of the imaging system. This capability is useful when the 3D distribution of the atoms is desired, such as determining the shape of an atom trap, particularly when there is limited optical access.

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