

Abstract Submitted
for the DAMOP18 Meeting of
The American Physical Society

Compressive imaging of ultracold atomic clouds JOSEPH D. MURPHREE, MAITREYI JAYASEELAN, ZEKAI CHEN, JUSTIN T. SCHULTZ, NICHOLAS P. BIGELOW, University of Rochester — Imaging is one of the primary ways spatial density and phase information is obtained from ultracold atomic clouds. Absorption imaging, one of the simplest and earliest methods, has been complemented by techniques that allow for the phase and polarization of a sample to be probed, or for the sample to be imaged non-destructively. Meanwhile, compressive sensing (CS) has increased the performance of a variety of imaging systems by extracting image information more efficiently than traditional imaging. Furthermore, the optics used in many of these CS implementations, such as digital micromirror devices, are becoming increasingly familiar in atomic physics labs, where the technique has already been used to improve spectroscopy. We investigate the use of CS to improve the efficiency of imaging of ultracold atomic clouds.

Joseph Murphree
University of Rochester

Date submitted: 26 Jan 2018

Electronic form version 1.4