Abstract Submitted
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Collective Excitations in Quasi-2D Condensates[1] ANDREW BARENTINE, DAN LOBSER, HEATHER LEWANDOWSKI, ERIC CORNELL, JILA, National Institute of Standards and Technology and Department of Physics, University of Colorado, Boulder — Quantum gases confined to lower dimensions exhibit remarkable physical properties such as the Berezkinskii-Kosterlitz-Thouless transition or the Tonks-Girardeau gas. Confinement effects in a quasi-2D condensate are predicted to shift the frequency of certain collective excitations, in particular the monopole mode. In our experiment, quasi-2D condensates are created by loading a 3D condensate into a 1D optical lattice, collective modes are then parametrically driven by modulating the strength of the trap. We have characterized a potential source of systematic error associated with a cross dimensional anharmonicity in the trap. This so called "anharmonic shear" also allows us to separate and simultaneously image each individual layer in the lattice.

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