Abstract Submitted
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Weakly interacting Bose-Einstein condensate in a disordered optical potential[1] T.A. CORCOVILOS, D. DRIES, J. HITCHCOCK, M. JUNKER, Y.P. CHEN[2], R.G. HULET, Department of Physics and Astronomy and Rice Quantum Institute, Rice University, Houston, TX 77005 — We report on experimental progress in studying the behavior of a nearly noninteracting Bose-Einstein condensate (BEC) of ^{7}Li atoms in a tunable disordered optical potential generated by laser speckle. We investigate the previously unexplored regime where the characteristic length scale of the disorder potential is shorter than the healing length, ξ, of the BEC. We increase ξ by using a Feshbach resonance to tune the s-wave scattering length of the atoms to nearly zero (specifically, less than the Bohr radius). Under these conditions new phenomena, such as Anderson localization, are predicted.

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