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Disordered Hubbard model with ultracold atoms[1] STANIMIR KONDOV, WILLIAM MCGEHEE, JOSHUA ZIRBEL, BRIAN DEMARCO, University of Illinois at Urbana-Champaign — We report progress in studying the effects of disorder on the phase diagram of the Hubbard model. The resulting disordered Hubbard model (DHM) is the subject of intense research in condensed matter physics due to its applicability to strongly correlated electronic systems. We realize the DHM using ultracold ^{40}K atoms in an optical lattice superimposed with a speckle light field. The aim of our study is to explore the variety of metallic and insulating phases which arise in the interplay between kinetic energy, interactions and disorder.

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