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Noise Correlation Measurements on the 3D Disordered Bose-Hubbard Model MATTHEW PASIENSKI, MATTHEW WHITE, DAVID MCKAY, BRIAN DEMARCO, University of Illinois — Atomic shot noise correlations can be used to study hidden order—or lack thereof—in atomic Bose-Hubbard (BH) systems and may be a promising tool for exploring the properties of the disordered BH model. To approach this model, an optical speckle field is used to add fine-grained disorder to a 3D optical lattice. The correlation length of the speckle field is less than twice the lattice period along all three lattice directions. We will discuss atomic shot noise correlation measurements on ultra-cold atom clouds released from this disordered 3D optical lattice.

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