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Simulating Thermopower in Mott-Hubbard Materials STANIMIR KONDOV, WILLIAM MCGEHEE, JOSHUA ZIRBEL, BRIAN DEMARCO, University of Illinois, DEMARCO LAB TEAM — We report progress on a new project to simulate and understand thermopower in Mott-Hubbard materials. Potassium-40 atoms that have been cooled to degeneracy and loaded into an optical lattice serve as the physical analog to these poorly understood, highly-correlated systems. A temperature gradient across the atomic cloud will induce mass flow, which can be directly related to an equivalent thermopower of charged particles. The transport properties of the cloud, which will vary with the dimensionality and strength of the lattice, will be measured using time-of-flight imaging and employed to determine the impact of Hubbard parameters, disorder, and lattice geometry on thermopower.

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