

Abstract Submitted
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Local spin excitations to probe strongly correlated Fermi gases¹

N. FREDMAN, W. MORONG, B. DEMARCO, University of Illinois at Urbana-Champaign — Ultracold Fermi gases trapped in optical lattices are a useful platform for investigating paradigms of strongly correlated electronic solids, such as the Fermi-Hubbard model. We propose probing local transport in a cubic ^{40}K optical lattice via direct measurements of spin diffusion and relaxation rates. Using tightly focused Raman beams, we will create a spatially localized minority spin component. Diffusion through the majority gas will be observed in real time using spin-resolved imaging. This technique will allow us to study transport in strongly correlated phases and will complement time-of-flight and Fermi gas microscope techniques. We discuss progress towards implementing this technique.

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