

# Optically-Trapped Interacting Fermi Gases

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Optically-trapped, ultra-cold gases of spin  $\frac{1}{2}$ -up and spin  $\frac{1}{2}$ -down  ${}^6\text{Li}$  atoms enable “designer” interactions, offering a versatile environment for simulating exotic quantum systems. I will discuss our latest measurements of hydrodynamic transport coefficients in the strongly interacting regime, where the cloud exhibits scale invariant, “nearly perfect” flow, analogous to that of a quark-gluon plasma, a state of matter at 2 trillion degrees that existed microseconds after the Big Bang. Then I will discuss measurements of information scrambling in the very weakly interacting regime, where the cloud behaves as a large spin lattice with effective long-range interactions.