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## The Sound of Fermions

Fermions run our world: All massive elementary particles are fermions, electrons zip through wires and Iphones, and neutrons bombard nuclei to power society. However, understanding transport of fermions is an exceedingly difficult challenge for many-body physics. Strong interactions, strong correlations and the fermion sign problem hamper our understanding. Using a strongly interacting gas of ultracold fermionic atoms, a million times thinner than air, we learn about the transport of fermions in the controlled setting of atomic physics experiments. In particular, I will present recent experiments on sound propagation performed with a gas of fermions trapped in a box of light. Below the superfluid critical temperature, these gases display two forms of sound, a density wave – first sound – and a heat wave – second sound. Using a novel local thermometry technique, we are able to track heat currents locally, and extract viscosity, thermal conductivity, and the superfluid density of strongly interacting Fermi gases.