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Title: What does the Weidemann-Franz law tell us about strange metals?

Abstract: The Wiedemann-Franz (WF) law, stating that the Lorenz ratio $L = \frac{\kappa}{T\sigma}$ between the electronic thermal and electrical conductivities in a metal approaches a universal constant at low temperatures, is often taken to be a signature of fermionic Landau quasi-particles. In contrast, we show that various models of weakly disordered non-Fermi liquids, where the fermionic quasi-particles are {\color{red} either marginally defined or ill-defined}, also obey the WF law at $T \to 0$. Instead, we argue that the behavior of the leading correction to the WF law at low temperature distinguishes different types of strange metals. In particular, in a solvable model of a marginal Fermi liquid, we find that the leading correction scales as T, in contrast to a Fermi liquid where it is proportional to T^2.