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(I) T-linear resistivity from an isotropic Planckian scattering rate

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Perfectly T-linear resistivity is observed in a variety of strongly correlated metals close to a quantum critical point [1] and has been attributed to a scattering rate $1/\tau$ of charge carriers that reaches the Planckian limit [2,3], with $\hbar/\tau = \alpha k_B T$ where α is of order unity. While this relationship is often inferred from simple estimates, a T-linear scattering rate has yet to be measured.

To directly access the Planckian scattering rate, we measured the angle-dependent magnetoresistance (ADMR) of Nd-LSCO at $p = 0.24$: a cuprate that demonstrates T-linear resistivity over a wide temperature range at the pseudogap critical point p^* [4]. The ADMR reveals a well-defined Fermi surface that precisely agrees with ARPES [5]. In addition, we extract a T-linear scattering rate that has the Planckian value, namely $\alpha = 1.2 \pm 0.4$. Remarkably, this inelastic scattering rate is isotropic.

Our findings suggest that T-linear resistivity in strange metals emerges from a generic isotropic, momentum-independent inelastic scattering rate that reaches the Planckian limit.

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