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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/τ of charge carriers that reaches the Planckian limit [2,3], with ℏ/⊠ = α ⊠⊠⊠ 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 α = 1.2 ± 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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Authors: GRISSONNANCHE, Gael (Cornell University); Ms FANG, Yawen (Cornell University); Dr LEGROS, Anaëlle (Université de Sherbrooke); Dr VERRET, Simon (Université de Sherbrooke); Dr LALIBERTÉ, Francis (Université de Sherbrooke); Dr COLLIGNON, Clément (Université de Sherbrooke); Mr ATAEI, Amirreza (Université de Sherbrooke); Prof. ZHOU, Jianshi (University of Texas); Dr GRAF, David (National High Magnetic Field Laboratory); Prof. GODDARD, Paul (University of Warwick); Prof. TAILLEFER, Louis (Université de Sherbrooke); Prof. RAMSHAW, Brad (Cornell University)

Presenter: GRISSONNANCHE, Gael (Cornell University)

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