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【127】 Fermi liquid scaling of the scattering rate in cuprates

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The normal state of cuprate high-temperature superconductors exhibits a plethora of unusual behaviors that hinder the understanding of the superconducting phenomenon. Despite this complexity, the behavior of the scattering rate was demonstrated to be surprisingly simple. It is doping and compound independent and exhibits a quadratic temperature dependence, like a Fermi liquid. A distinct property of Fermi-liquids is that they obey Kohler's rule, $\delta\rho/\rho_0 = F(H\tau)$, which is a scaling relation between the magnetoresistance $\delta\rho/\rho_0$, magnetic field H , and lifetime τ . We will demonstrate that this scaling is obeyed throughout the phase diagram of cuprates and further illustrate the universality of the scattering rate, and verify the Fermi-liquid nature of itinerant carriers.

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