



Tuesday, Nov 26th 2019 - 15:00
CFEL Seminar room IV (Bldg. 99)

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Electronic dynamics of strange metals

The normal state of unconventional superconductors often exhibits anomalous transport properties and it is commonly referred to as a “bad” or “strange” metal. Understanding its collective charge dynamics, which defies the standard quasiparticle description of a Fermi liquid, is an outstanding challenge of modern condensed matter physics.

In this talk, I will present a direct measurement of the collective charge dynamics of the strange metal using inelastic electron scattering. First, I will discuss how normal-state $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+d}$ is defined by a featureless, localized continuum, undergoing a low-temperature massive spectral weight redistribution. I will then describe how such a phase is found to coexist with a low-energy Fermi liquid in Sr_2RuO_4 .

These results indicate that strange metals are highly localized in space and dissipate on ultrafast timescales, seemingly bound only by quantum limits. Implications for the occurrence of high-temperature superconductivity will be discussed.

