

# Metal to Strange Metal Transition in Correlated Materials

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## **Abstract**

Strange metal or non-Fermi liquid (NFL) physics precedes many exotic phases of matter such as high- $T_c$  superconductivity. Often the route to NFL physics from the conventional metal is smooth or adiabatic, and thus a mechanism which can interpolate these two phase is not well established. In this talk, we will present a new model calculation of the many-body self-energy which is not only frequency dependent, but also strongly momentum dependent. The self-energy arises from strong density-density fluctuations, and thus becomes dominant at the 'hot-spot' regions of high density of states, such as van-Hove singularity. Such 'hot-spots' govern strange metal phase while the rest of the Brillouin zone continues to be a simple Fermi liquid. The spectral weight transfers between these two regions, caused by doping, temperature and other parameters, manifests into an adiabatic transition from a simple metal to the strange metal phase.