# Transport and Superconductivity in Strongly Interacting Quantum Matter: Exact and Unbiased Numerical Simulations

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Lev Landau's reduction of weakly interacting electrons into quasiparticles - essentially renormalized but otherwise free particles - forms the basis for a standard model of condensed matter systems. However, a theory to describe transport in strongly interaction systems has been lacking. Moreover, the notion of "bad metals" has been plausibly linked to "high temperature" superconductivity by Phil Anderson, which has formed a central tenet for an understanding of the cuprates, for example. Despite multiple decades of effort, there has been no theoretically derived link between the two.

Yet, a tremendous amount of advancement in exact and unbiased numerical methods has been made just in the last 5-10 years. In this talk I will review some of this work that sheds light into the ground state and transport properties of simple models for strongly correlated electrons. While much remains unresolved, I will give a status update and discuss a possible link between transport properties and superconductivity (if time permits).