

Quantum-critical metals outside the validity of the Eliashberg theory

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Quantum-critical behavior in metals is often studied within the Eliashberg theory. I will present the results of a recent study whose goal is to understand when this theory is valid, and when it breaks down before a quantum-critical point is reached. For the latter case, I will argue that the system behavior can be analyzed within the eikonal (continued fraction) approach. I show that outside the Eliashberg regime the system develops pseudogap behavior, either as a precursor to an ordered state or to pairing.