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T-linear resistivity and hot Fermi surface from spin-density wave quantum critical fluctuations[1] DOMINIC BERGERON, A.-M. S. TREMBLAY, Universite de Sherbrooke — The linear dependence in temperature T of the resistivity observed in the normal phase of unconventional superconductors is often attributed to quantum critical behavior. We use the two-particle self-consistent (TPSC) approach to the Hubbard model to study this problem. The quantum critical point is associated with a spin-density wave (SDW) phase transition at zero-temperature on the 2D square lattice at finite doping. Our approach satisfies the Mermin-Wagner theorem, the Pauli principle and conservation laws, and is valid from weak to intermediate coupling. We take into account vertex corrections. For the model with nearest neighbors only and also with t' and t'', we compute, as a function of T, contributions to the conductivity coming from different directions in the Brillouin zone. Our results show that the low temperature resistivity is linear because the whole Fermi surface is hot down to the lowest temperatures studied. This occurs because the SDW correlation length and the thermal de Broglie wavelength both scale as $1/T$.

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