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Fluctuation corrections to the conductivity and the Hall conductivity near a spin–density–wave quantum critical point[1] JIE LIN, ANDREW MILLIS, Department of Physics, Columbia University — On the mean field level, the presence of the spin density wave order gives rise to distinct features in the transport properties of the electron–doped cuprates, which agree qualitatively with experimental data. Here, we determine how fluctuations modify the mean field behavior of the conductivity and the Hall conductivity, with particular attention to the vicinity of the quantum critical point. We developed a theory that respects the spin rotation symmetry. We determine the electron–spin fluctuation vertex and thus the transport and spectral properties of the electrons. Our formulation leads to a correctly gauge-invariant description of the transport properties of the pseudogap state occurring for a 2D Heisenberg system at $T > 0$.

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