Evolution of spectral functions and transport quantities with doping in the SU(2) theory of cuprates.

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Recent transport experiments in the cuprate superconductors shed new light on the connection between the enigmatic pseudogap phase and the evolution of the electronic dispersion under doping. The latter is known to evolve from Fermi arcs measured by ARPES in the underdoped regime, to a large hole Fermi surface at high doping, as seen e.g. in quantum oscillation measurements. Combined Hall number and resistivity measurements at high magnetic field showed that the carrier density sharply changes from p to $1+p$ at the pseudogap critical doping p^*, linking the opening of the pseudogap to a change in electronic dispersion.

The SU(2) theory of cuprates shows that antiferromagnetic short range interactions cause the arising of both charge and superconducting orders, which are related by an SU(2) symmetry. The fluctuations associated with this symmetry form a pseudogap phase, which was shown to account for Raman, ARPES and strange metal experimental evidence. Here we derive the renormalised electronic propagator under the SU(2) dome, and calculate the spectral functions and transport quantities of the renormalised bands. We show that their evolution with doping matches both spectral and transport measurements.