Abstract Submitted
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Extremely Correlated Fermi Liquid theory: Imposing the hole density sum-rule[1] B. SRIRAM SHASTRY, Univ of California-Santa Cruz — The analytical theory of extremely strongly correlated Fermi liquids (ECFL) for the large U models, when applied to Cuprate superconductors in the nodal direction, provides ARPES spectral line shapes that are very close to experiments. Approximate lowest order calculations within this formalism also closely reproduce the spectral line shapes for the single impurity Anderson model found using the Numerical Renormalization Group. Similarly excellent comparison is possible with the Dynamical Mean Field Theory self energy for the Hubbard model in high dimensions. However these calculations yields too large an energy scale for frequency dependence, in the proximity of integer (or Mott) filling. We show that the theory permits the imposition of sum rules for hole density, rather than the electron density used earlier, on the Greens functions of the theory. The numerical results of these variants are presented, and compared to the earlier calculations. The new results go a long way towards resolving the energy scale problem, while retaining the excellence of line shapes.

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