Spectral Functions of the Extremely Correlated Quantum Liquid[1]

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— The recently developed theory of an Extremely Correlated Quantum Liquid (ECQL)[1], provides an exact Schwinger Dyson equation of the t-J model, in terms of triplet and singlet vertices. The lowest order scheme for the vertices leads to a self energy $\Sigma \sim GGG$, with coefficients such that it survives the limit of $n \to 1$. We present the resulting spectral functions for this case. We also consider a higher order approximation (akin to the RPA) with a bubble sum, this approximation is argued to be dominant near half filling. The resulting non Fermi liquid like spectral functions are displayed. Optical and Raman spectra are calculated within each scheme. A general presentation of the ECQL as well as related numerical studies of magnetic response within the t-J model are presented elsewhere at this conference [1,2]. [1] Extremely Correlated Quantum Liquids, B. Sriram Shastry Preprint (2009).

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