

Abstract Submitted
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Extremely Correlated Quantum Liquids¹ B. SRIRAM SHASTRY,
University of California Santa Cruz — The Extremely Correlated Quantum Liquid (ECQL) is obtained in the $U \rightarrow \infty$ limit of strongly correlated systems- so that double occupancy is prohibited[1]. The t - J model, a standard example of this class is studied by the new formulation[1]. We present the exact Schwinger Dyson equation for its Greens function, in terms of singlet and triplet vertex functions. The vertices are expanded further in a set of non linear equations, and the existence of a low hole density expansion is demonstrated. Its Fermi surface volume differs from the Luttinger Ward volume *at all densities*. The excitations are fractionally charged particles, where the fraction is determined by the density. The fractionalization arises from a modified Pauli principle for filling of the Lower Hubbard band. Numerical results for the magnetic susceptibility and the spectral functions arising from systematic expansions are presented elsewhere in this conference [2-3]. [1] *Extremely Correlated Quantum Liquids*, B. S. Shastry Preprint (2009). [2] *Magnetic response of the Extremely Correlated Electron Liquid*, A. Garg, D. Hansen and B. S. Shastry (APS March meeting 2010). [3] *Spectral functions of the Extremely Correlated Quantum Liquid*, D. Hansen, A. Garg, and B. S. Shastry (APS March meeting 2010).

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