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Possible spin gap in the frustrated Hubbard metal and quantum spin liquid[1] NILADRI GOMES, SUMIT MAZUMDAR, University of Arizona, R. TORSTEN CLAY, Mississippi State University — The consequences of strong electron-electron interactions and geometric lattice frustration are both of strong interest in condensed matter physics, and their interplay can lead to exotic phenomena. Interest in the strongly interacting frustrated systems stems from the seminal proposal by Anderson that the ground state of the Heisenberg antiferromagnetic spin Hamiltonian is a Quantum Spin Liquid (QSL), which remains in a disordered state even at the lowest temperatures. Even as this proposal has been found to be incorrect, it has led to an intense theoretical search for QSLs within various frustrated- lattice spin Hamiltonians, as well as experimental investigations of frustrated magnetic insulators. We have initiated studies on an *electronic* (as opposed to spin) model, - the $\frac{1}{2}$-filled band Hubbard model on a triangular lattice - where the QSL state emerges when the Hubbard interactions and the lattice frustration are both strong. We find evidence for a peculiar spin gap in the paramagnetic metallic as well as the QSL phase of the frustrated Hubbard model.

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