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Charge and magnetic order in the frustrated Hubbard model at one-third filling[1] MATTHEW ENJALRAN, Southern CT State University — In material systems with localized electrons the Heisenberg model is a logical starting point to study the possible phases of matter. When the interactions are frustrated, the Heisenberg model (classical or quantum) exhibits a rich phase diagram with exotic correlated magnetic states, e.g., spin liquid, spin ice, and spin glass phases. When interactions between electrons are weaker, a localized moment description becomes insufficient and the Hubbard model, with charge and magnetic degrees of freedom, is more appropriate. Similar to the Heisenberg model, frustration enriches the the phase diagram of the Hubbard model. The interactions of itinerant electrons on a triangular lattice are frustrated, and this model is relevant to a number of experimental systems, most notably the organic charge transfer salts. We present preliminary results from mean-field theory calculations of the triangular lattice Hubbard model, where at one-third filling we observe a transition from a paramagnetic metal to a charge ordered antiferromagnet on a honeycomb sublattice at a critical interaction strength. We will also present results for the half-filled anisotropic model.

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