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The effect of geometric frustration on the charge and spin correlations of the 2D Hubbard model near the metal-insulator transition[1]
MATTHEW ENJALRAN, Department of Physics, Southern CT State University, New Haven, CT — We investigate the effect of geometric frustration on the low temperature charge and spin correlations of interacting electrons on the triangular and kagome lattices near the metal-insulator transition. We consider the half-filled single band Hubbard model in the unrestricted Hartree-Fock approximation and study the evolution of the low temperature phases on each lattice as function of geometric frustration, which is achieved by tuning the ratio of the hopping parameters t'/t. We present results for the mean-field phase diagram of the anisotropic triangular lattice as the relative hopping strength changes the lattice topology from the square lattice to the fully frustrated triangular lattice to weakly coupled chains. Preliminary results for mean-field phases on the anisotropic kagome lattice are also presented.

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