

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Emergent triangular structure in doped extended honeycomb Hubbard model** LUCA F. TOCCHIO, Consiglio Nazionale delle Ricerche (CNR) and International School for Advanced Studies (SISSA), RYUI KANEKO, ROSER VALENTI, Goethe-Universitaet Frankfurt, FEDERICO BECCA, Consiglio Nazionale delle Ricerche (CNR) and International School for Advanced Studies (SISSA), CLAUDIUS GROS, Goethe-Universitaet Frankfurt — We investigate the extended honeycomb Hubbard model at  $3/4$  filling. By using the mean-field approximation, we find a transition from a normal metal to a ferromagnetic metal at large Coulomb interaction  $U$ , and a transition to a charge ordered metal at large nearest-neighbor Coulomb interaction  $V$ . In the presence of both  $U$  and  $V$ , we find a metal-insulator transition, where the insulating state possesses charge and magnetic orders. The charge rich sites are nearly fully occupied, while the charge poor sites form a triangular lattice at nearly half filling. We also apply the variational Monte Carlo method to take into account quantum fluctuations beyond the mean-field treatment, and find this charge ordered state to be stable at sufficiently large  $U$  and  $V$ .

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Date submitted: 05 Nov 2015

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