Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Phase separation in doped Mott insulators CHUCK-HOU YEE, LEON BALENTS, Kavli Institute for Theoretical Physics, UCSB — Motivated by the commonplace observation of Mott insulators away from integer filling, we construct a simple thermodynamic argument for phase separation in first-order doping-driven Mott transitions. The theory predicts the transition is percolative and should exhibit Coulomb frustration. As an application, we consider the titanate family of perovskites, an ideal test case since both the doping and correlation strength can be tuned. We compute the critical dopings required to drive the Mott transition using first-principles methods combined with dynamical mean-field theory, finding good agreement with experiment.

Chuck-Hou Yee
Kavli Institute for Theoretical Physics, UCSB

Date submitted: 15 Nov 2013 Electronic form version 1.4