

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Mott-

Slater transition in undoped cuprates¹ ROBERT MARKIEWICZ, GIANINA BUDA, PETER MISTARK, CHRIS LANE, ARUN BANSIL, Northeastern Univ — We study phases of short-range magnetic order by coupling different density-wave modes with a self-consistent vertex correction. By tuning the band structure we are able to transform between different cuprates, finding a transition between order driven by conventional Fermi-surface nesting and order driven by Van Hove nesting. While the former describes an incommensurate Slater spin-density wave, the latter represents a Mott (π, π) antiferromagnet, where the Fermi surface plays only a minor role. While most cuprates fall on the Slater-side of the transition, $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ (LSCO) lies just on the Mott side. Remarkably, just at the transition there is an emergent spin-liquid phase, which may play a role in the LSCO phase diagram.

¹Work supported in part by the US Department of Energy

Robert Markiewicz
Northeastern Univ

Date submitted: 11 Nov 2016

Electronic form version 1.4