

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Fermi-surface-free Superconductivity near a Topological Transition in Cuprates** PETER MISTARK, HASNAIN HAFIZ, ROBERT MARKIEWICZ, ARUN BANSIL, Northeastern Univ — The phase diagram for cuprates has grown from a simple superconducting dome to one which includes a pseudogap phase and other potential orders which cut the superconducting dome into distinct parts. Investigating the doping dependence of the Fermi surface (FS) for hole doping of an antiferromagnetic (AFM) plus superconducting (SC) system, we find a transition from a FS with nodal hole pockets to one which also includes antinodal electron pockets. The key experimental signature of this transition is that the antinodal spectral weight increases dramatically after the appearance of the electron pocket. Just preceding this transition superconductivity can take advantage of the density of states associated with the antinodal band above the FS, creating a superconducting gap in the absence of a band crossing the FS: fermi-surface-free superconductivity.

Peter Mistark  
Northeastern Univ

Date submitted: 15 Nov 2013

Electronic form version 1.4