Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Fermi arcs vs Fermi pockets in Perovskite Iridates: A first principles study HASNAIN HAFIZ, Northeastern U., JUNFENG HE, T.R. MION, T. HOGAN, Boston College, C. DHITAL, Boston C. and ORNL, X. CHEN, Q. LIN, Boston College, M. HASHIMOTO, D.H. LU, SLAC, Y. ZHANG, Peking U., R.S. MARKIEWICZ, Northeastern U., S.D. WILSON, Boston C. and UCSB, RUI-HUA HE, Boston College, A. BANSIL, Northeastern U. — The Ruddlesden-Popper series of iridates ($Sr_{n+1}Ir_nO_{3n+1}$) and 3d transition metal copper oxides (cuprates) share key features in their structural and electronic properties. A recent angle-resolved photoemission (ARPES) study[1] of electron-doped Sr_2IrO_4 reported similar features in underdoped cuprates, including the presence of disconnected gapless segments of the Fermi surface or Fermi arcs. We report first principles calculations on electron-doped $Sr_3Ir_2O_7$ to gain insight into the evolution of the Fermi surface with doping. We discuss Fermi arcs and Fermi pockets in single and bilayer iridates, and show that even though Fermi arcs are a generic feature of the cuprates, this is not the case in the iridates.

[1]Science 345, 187-190 (2014)

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Date submitted: 13 Nov 2014 Electronic form version 1.4