

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Coherent quasiparticles with a small Fermi Surface in lightly doped $\text{Sr}_3\text{Ir}_2\text{O}_7$ ALBERTO DE LA TORRE, SIOBHAN MCKEOWN WALKER, ANNA TAMAI, University of Geneva, EMILY HUNTER, University of Edinburgh, ALASKA SUBEDI, Ecole Polytechnique, TIMUR KIM, MORITZ HOESCH, Diamond Light Source, ROBIN PERRY, University College London, ANTOINE GEORGES, College de France, FELIX BAUMBERGER, University of Geneva — We characterize the electron doping evolution of $(\text{Sr}_{1-x}\text{La}_x)\text{Ir}_2\text{O}_7$ by means of angle-resolved photoemission. Concomitant with the metal insulator transition around $x \approx 0.05$ we find the emergence of coherent quasiparticle states forming a closed small Fermi surface of volume $3x/2$, where x is the independently measured La concentration. The quasiparticle weight Z remains large along the entire Fermi surface, consistent with the moderate renormalization of the low-energy dispersion and no pseudogap is observed. This indicates a conventional, weakly correlated Fermi liquid state with a momentum independent residue $Z \approx 0.5$ in lightly doped $\text{Sr}_3\text{Ir}_2\text{O}_7$, in stark contrast with underdoped cuprates.

Alberto De la Torre
University of Geneva

Date submitted: 14 Nov 2014

Electronic form version 1.4