Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

ARPES observation of non-Fermi liquid behavior in hole-doped $LiFe_{1-x}V_xAs$ and electron-doped $LiFe_{1-x}Co_xAs$ superconductors PIERRE RICHARD, L. Y. XING, X. SHI, X. C. WANG, Q. Q. LIU, B. Q. LV, J.-Z. MA, B. B. FU, L.-Y. KONG, T. QIAN, H. DING, C. Q. JIN, Institute of Physics, Chinese Academy of Sciences, H. MIAO, Brookhaven National Laboratory, T. K. KIM, M. HOESCH, Diamond Light Source — As with other Fe-based superconductors, the Fermi surface of LiFeAs is composed of multiple hole and electron Fermi surface pockets mainly derived from $3d_{xy}$, $3d_{yz}$ and $3d_{xz}$ orbitals. With its direct momentum resolution, ARPES is a powerful technique able to track the evolution of the Fermi surface upon doing. Here we reveal a non-Fermi liquid behavior in both Co-doped (electron) and V-doped (hole) LiFeAs characterized by a sub-square temperature dependence of the electrical resistivity. We show that for both types of carrier doping, the less Fermi liquid like behavior coincides with good Fermi nesting conditions between a hole and an electron Fermi surface pockets with different orbital characters that are separated by the "antiferromagnetic" wave vector Γ-M. Our results suggest that the non-Fermi liquid behavior is driven by low-energy inter-orbital antiferromagnetic fluctuations, but that this observation is not correlated with superconductivity.

Pierre Richard
Institute of Physics, Chinese Academy of Sciences

Date submitted: 07 Nov 2016 Electronic form version 1.4