

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Bogoliubov Electronic Structure at Individual Impurity Atoms in LiFeAs YANG XIE, Laboratory of Solid State Physics, Department of Physics, Cornell University, Ithaca, NY 14853, USA, MILAN ALLAN, CMPMS Department, Brookhaven National Laboratory, Upton, NY 11973, USA, ANDREAS ROST, Laboratory of Solid State Physics, Department of Physics, Cornell University, Ithaca, NY 14853, USA, ANDY MACKENZIE, SUPA, School of Physics and Astronomy, University of St. Andrews, St. Andrews, Fife KY16 9SS, UK, KUNIHICO KIHOU, HIROSHI EISAKI, Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki 305-8568, Japan, TIEN-MING CHUANG, JAMES DAVIS, CMPMS Department, Brookhaven National Laboratory, Upton, NY 11973, USA — Individual impurity atoms in a superconductor can strongly perturb the surrounding electronic environment and can therefore be used to probe high-temperature superconductivity at the atomic scale. Spectroscopic imaging scanning tunneling microscopy (SI-STM) is an ideal technique for the study of such effects. This has provided the motivation for several theoretical studies predicting the spatial and energetic structure of Bogoliubov electronic states at single impurity atoms in Fe-based superconductors. Here we report on a type of impurity atom that forms a strong in-gap quasi-particles interference (QPI) pattern nearby in the Fe-based superconductor LiFeAs. Our result puts a number of restrictions on theoretical studies of Fe-based superconducting mechanism.

Yang Xie
Cornell University

Date submitted: 29 Nov 2011

Electronic form version 1.4