Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Probing the temperature scales in cuprate high-temperature superconductor by ultrafast angle-resolved photoemission WENTAO ZHANG, Lawrence Berkeley Natl Lab, CHRIS SMALLWOOD, TRISTAN MILLER, University of California, Berkeley, CHRIS JOZWAIK, Lawrence Berkeley Natl Lab, HIROSHI EISAKI, National Institute of Advanced Industrial Science and Technology, Japan, DUNG-HAI LEE, ALESSANDRA LANZARA, University of California, Berkeley — We used time- and angle-resolved photoemission (trARPES) to measure the non-equilibrium electronic states of $Bi_2Sr_2CaCu_2O_8$ high temperature superconductor. Detailed temperature and pump fluence dependent measurements were taken on these samples to study the temperature scales in cuprate, giving a phase diagram from the view of the non-equilibrium study. These results indicate that trARPES is a powerful tool in probing the quantum phase transitions in materials.

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Date submitted: 14 Nov 2013 Electronic form version 1.4