

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Measuring particle-hole asymmetry in Bi2212 with time-resolved spectroscopy

¹ TRISTAN MILLER, Lawrence Berkeley National Laboratory, UC Berkeley, WEN-TAO ZHANG, Shanghai Jiao Tong University, HIROSHI EISAKI, Electronics and Photonics Research Institute, National Institute of Advanced Industrial Science and Technology, ALESSANDRA LANZARA, Lawrence Berkeley National Laboratory, UC Berkeley — One of the central questions in high-temperature superconductivity is the nature of the pseudogap state and its relation to superconductivity. Competing explanations of the pseudogap raise basic questions about its structure. The superconducting gap is known to have particle-hole symmetry, but it is not yet known whether the pseudogap shares this property. Here, we introduce a sensitive way to measure particle-hole symmetry in high-temperature superconductor Bi2212 by pumping it with laser pulses and measuring the ultrafast response of the chemical potential. By comparing samples with different doping, we discover new clues into the structure of the pseudogap.

¹Supported by the Director, Office of Science, Office of Basic Energy Sciences, Materials Sciences and Engineering Division, of the U.S. Department of Energy, under Contract No. DE-AC02-05CH11231, part of the Ultrafast Materials Science Program (KC2203)

Tristan Miller
Lawrence Berkeley National Laboratory, UC Berkeley

Date submitted: 10 Nov 2016

Electronic form version 1.4