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Shift in Chemical Potential of Superconducting Bi2212 Measured by Ultrafast Photoemission Spectroscopy[1] TRISTAN MILLER, CHRIS SMALLWOOD, Department of Physics, University of California, Berkeley, WENTAO ZHANG, Material Sciences Division, Lawrence Berkeley National Laboratory, HIROSHI EISAKI, Electronics and Photonics Research Institute, National Institute of Advanced Industrial Science and Technology, DUNG-HAI LEE, ALESSANDRA LANZARA, Department of Physics, University of California, Berkeley — Time- and Angle-resolved photoemission spectroscopy (tr-ARPES) has been used to directly measure the dynamics of many different properties of high-temperature superconductors, including the quasiparticle relaxation, cooper pair recombination, and many-body interactions. There have also been several intriguing results on several materials showing how laser pulses can manipulate their chemical potential on ultrafast timescales, and it's been suggested that these effects could find applications in optoelectronic devices. Studies on GaAs have also found that laser pulses may induce a surface voltage effect. Here, we extend these studies for the first time to a Bi2212 sample in the superconducting state, and disentangle the shift in chemical potential from surface voltage effects.

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