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Quasiparticle Dynamics of $Bi_2Sr_2CaCu_2O_8$ from High Momentum Resolution Laser-Based ARPES JAKE KORALEK, University of Colorado, FRASER DOUGLAS, NICK PLUMB, ZHE SUN, MARGARET MURNANE, HENRY KAPTEYN, STEVEN CUNDIFF, DANIEL DESSAU, University of Colorado, Y. AIURA, K. OKA, H. EISAKI, AIST, Tsukuba, Japan — We present the first laser based angle resolved photoemission (ARPES) study of the High Tc superconductor Bi-2Sr-2CaCu-2O-8. This new technique uses 6 eV photons from the 4th harmonic of a high repetition rate Ti:Sapphire oscillator. The new light source offers increased count rate and momentum resolution, while reducing surface sensitivity and background relative to traditional ARPES light sources. In addition to reproducing BSCCO features seen in previous ARPES experiments (d-wave superconducting gap, dispersion kinks, etc.) these improvements have allowed us to make much stronger statements about the nature of the quasiparticle dynamics both in the normal and superconducting states.

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