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Quasiparticles in Bi-2212 I.M. VISHIK, W.-S. LEE, Stanford University, K. TANAKA, Osaka University, B. MORITZ, E.A. NOWADNICK, Stanford University, T. SASAGAWA, Tokyo Institute of Technology, T. FUJII, Tokyo University, T.P. DEVEREAUX, Z.-X. SHEN, Stanford University — From ARPES measurements, much has been learned about the single-particle excitations of the high-Tc cuprate superconductors, and collective properties can be inferred from these experiments too. The gap in the spectrum below Tc is related to the superconducting gap, and the superfluid density, the other hallmark of superconductivity, has been demonstrated to correlate closely with the weight of the antinodal quasiparticle peak. The momentum, temperature, and doping dependence of quasiparticle lifetime yields information about scattering processes, which are related to ground state properties. In Bi-2212 quasiparticles are present on the entire Fermi surface over a wide doping range. We present ARPES studies of the quasiparticles in Bi-2212 as a function of doping, momentum, and temperature, and discuss connections to other experiments.

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