

Abstract Submitted
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Optical and thermodynamic properties of Hg-1201 E. VAN HEUMEN, R. LORTZ, F. CARBONE, A.B. KUZMENKO, D. VAN DER MAREL, Universite de Geneve, X. ZHAO, G. YU, Y. CHO, N. BARISIC, M. GREVEN, Stanford university, C.C. HOMES, Brookhaven National Laboratory, S.V. DORDEVIC, Akron University — We present optical spectra and specific heat measurements of the optimally doped, single layer cuprate superconductor $\text{HgBa}_2\text{CuO}_4$ ($T_c = 97$ K). Optical spectra have been obtained with a high temperature resolution allowing us to track small changes in the integrated spectral weight. We find that the low frequency spectral weight shows an extra increase when the system enters the superconducting state, indicating that the kinetic energy of the charge carriers decreases in the superconducting state. This is consistent with our earlier observations on other optimally doped cuprates^{1,2}. From specific heat measurements on the same sample we estimate the change in internal energy and compare this with the estimated changes of the kinetic energy. We find a change in internal energy $\Delta U \approx 0.1$ meV per copper and $\Delta W \approx 0.1$ meV per copper for the kinetic energy.

D. van der Marel
Universite de Geneve

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