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Optical conductivity of single plane cuprate superconductor $HgBa_2CuO_4$ R.P.S.M. LOBO, N. BONTEMPS, CNRS-ESPCI, Paris, France, J. HWANG, J. YANG, T. TIMUSK, McMaster University, Hamilton, Canada, D. COLSON, A. FORGET, DRECAM/SPEC, CEA, Saclay, France — We investigated the ab-plane infrared and visible spectra of a $HgBa_2CuO_4$ single crystal close to optimal doping (T_c = 90 K) from 100 to 40000 cm^{-1}. Data as a function of temperature (down to 30 K) was limited to frequencies below 10000 cm^{-1}. The low frequency scattering rate has a linear frequency dependence. Under 120 K a supplementary small drop below 1000 cm^{-1} suggests the presence of a pseudogap. This is the same frequency at which the optical conductivity shows a clear loss of spectral weight in the superconducting state. The low frequency effective mass is temperature dependent and increases from 1.5 at room temperature to 2.5 just above T_c. We will compare our results to other single plane cuprates.

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