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**Far IR Hall Angle Measurements on Single Crystal $Bi_2Sr_2CaCu_20_{8+x}$.**[1] GREGORY JENKINS, D.C. SCHMADEL, H.D. DREW, Physics Department, University of Maryland, College Park, MD 20742, GENDA GU, Department of Physics, Brookhaven National Laboratory, Upton, NY 11973 — The far-infrared complex Hall angle was studied in thin optimally doped single crystal $Bi_2Sr_2CaCu_20_{8+x}$ as a continuous function of temperature from 25 to 300 K and at a discrete set of frequencies in the range of 25 $cm^{-1}$ to 175 $cm^{-1}$ using a heterodyne technique. The real part of the inverse Hall angle obeys a temperature power law, $T^n$, where n = 1.65 which is consistent with the dc-value. For the three frequencies below 90 $cm^{-1}$, the Hall frequency is a constant in temperature and frequency to within 20% from $T_C$ up to room temperature. The Hall mass of 2.5 $m_e$ in reasonable agreement with the values found in far IR optical measurements 3.0 $m_e$, ARPES dispersion results along the $(\pi, \pi)$ nodal direction (2.9 $m_e$), and mid IR Hall measurements (2.8 $m_e$) where $m_e$ is the bare electron mass. These results will be compared with theoretical predictions.

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