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A THz spectroscopic study of the heavy fermion $CeFe_2Ge_2$
GRACE BOSSE, Johns Hopkins University, Y. LI, L.H. GREENE, J. ECKSTEIN, University of Illinois at Urbana-Champaign, N.P. ARMITAGE, Department of Physics and Astronomy, Johns Hopkins University — We present time-domain THz spectroscopy data on a thin film of the heavy fermion compound $CeFe_2Ge_2$. Non-Fermi liquid behavior and a metamagnetic anomaly have been observed in $CeFe_2Ge_2$ pointing to its proximity to a quantum critical point, much like the well studied compounds $CeNi_2Ge_2$ and $CeRu_2Si_2$. A $T^{1.5}$ dependence of resistivity has been reported in the temperature range of 2K-15K. Our measurements to obtain the complex conductivity as a function of frequency were taken from room temperature down to 1.5K. Using this data in addition to DC resistivity measurements, we calculate the frequency dependent scattering rate using an extended Drude model analysis. The power law dependence of the scattering rate on frequency will be discussed in its relation to the anomalous transport properties that have been reported in this material.

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