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Optical spectra of the heavy fermion uniaxial ferromagnet UGe2 VIOLETA GURITANU, PETER ARMITAGE, RICCARDO TEDIOSI, SIDDHARTH SAXENA, ANDREW HUXLEY, DIRK VAN DER MAREL, DPMC, UNIVERSITY OF GENEVA, 24, TEAM, DEPARTMENT OF PHYSICS AND ASTRONOMY, COLLABORATION, DEPARTMENT OF PHYSICS, CAVENDISH LABORATORY, COLLABORATION, DPARTEMENT DE RECHERCHE FONDAMENTALE SUR LA MATIRE CONDENSE - SPSMS, COLLABORATION —
We report on a detailed optical study of UGe_2 single crystalline material using infrared reflectivity and spectroscopic ellipsometry. The optical conductivity suggests the presence of a low frequency interband transition (300 cm^{-1}) and a narrow free-carrier response with strong frequency dependence of the scattering rate and effective mass. We observe sharp changes in the low frequency mass and scattering rate below the upper ferromagnetic transition T_{C_1}. They recover their unrenormalized value above T_{C_1} and for $\omega > 250$ cm^{-1}. In contrast no sign of an anomaly is seen at $T_{C_2} \sim 30$ K, which is the lower transition of unknown nature. These observations are consistent with the weak anomaly observed at T_{C_2} in transport and thermodynamic experiments.

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