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Optical evidence of Fermi liquid scattering in URu₂Si₂ THOMAS TIMUSK, JESSE HALL, SARAH PURDY, TRAVIS WILLIAMS, GRAEME LUKE, McMaster University, TOOMAS RÕÕM, TAANIEL ULEKSIN, URMAS NAGEL, Natl. Inst. of Chem Phys, & Biophys., Tallinn, Estonia, RICARDO LOBO, ESPCI-Paris-Tech, Paris France, P. LEJAY, Inst. Neel, Grenoble, France, CHRISTOPHER HOMES, Brookhaven Natl. Lab. Upton, N.Y. — We present new high resolution, low noise, data that demonstrates that in the coherent heavy Fermion state of URu₂Si₂ the conductivity is due to heavy ($m \approx 50m_e$) quasiparticles with a self energy that is dominated by Fermi liquid scattering according to $1/\tau(T, \omega) = A(\omega^2 + (\pi T)^2)$ where the coefficient $A = 0.23 \mu\Omega\text{cmK}^{-2}$. We use this property to develop a new method of reducing the noise in the low frequency reflectance spectra of this material. In the hidden order state the spectra show evidence of anisotropy of the hidden order gap parameter with $2\Delta_{max} = 6.0$ meV and $2\Delta_{min} = 4.6$ meV.

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