

Abstract Submitted
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Optical conductivity of URu₂Si₂: gaps and electron phonon coupling R.P.S.M LOBO, ESPCI, CNRS, UPMC — We measured the in-plane and out-of-plane optical conductivity of URu₂Si₂. The hidden order transition at 17 K shows the opening of a gap in both polarizations, with a sharp decrease in the optical scattering rate. Above the hidden order we find a redistribution of spectral weight that closely follows the dc resistivity. The appearance of a coherent transport behavior in the resistivity is accompanied by the formation of a sharp Drude-like peak. We also found all four polar phonons expected from a group theory analysis. The number and shape of the phonons remain mostly unchanged across the hidden order transition. These phonons are strongly coupled to the electronic continuum as shown by their Fano asymmetric line shape. We found a strongly temperature dependent Fano-Wigner-Breit parameter with striking changes close to the Kondo transition. Our results suggest a rearrangement of the continuum density of states around this temperature. The changes found have opposite in-plane and out-of-plane behaviors.

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