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Optical conductivity of the Hidden order phase in URu<sub>2</sub>Si<sub>2</sub> R.P.S.M. LOBO, LPEM, ESPCI, CNRS, Paris, France, C.C. HOMES, Brookhaven National Laboratory, Upton, NY, USA, P. LEJAY, Institut Neel, CNRS, UJF, Grenoble, France — We measured the optical conductivity of an URu<sub>2</sub>Si<sub>2</sub> single crystal as a function of temperature. URu<sub>2</sub>Si<sub>2</sub> shows a coherent transport transformation around 70 K and a phase transition to a still unknown (hidden) order below 17 K. Below the coherence temperature we observe a consistent development of a very low frequency Drude-like peak. At the hidden order transition our results show a large spectral weight redistribution below 15 meV with an optical conductivity typical of a density wave gap. This spectral weight redistribution goes together with the appearance of a sharp peak at 5 meV. We will discuss effects of the hidden order transition on the carriers scattering rate and effective mass and compare our data with the earlier work of Bonn *et al.*, PRL **61**, 1305 (1988).

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