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【632】Optical evidence for bad-metal behavior in the doped Mott-insulator Sr2IrO4

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We measured the in-plane optical conductivity spectra between 0.01 and 4eV of (Sr1-xLax)2IrO4.Our data confirm that Sr2IrO4 is a Mott insulator with a gap onset at about 0.1eV.La substitution leads to a rapid collapse of the gap which is completed for x=0.05, and the emergence of a narrow-mode associated to free charge carriers. The intensity of this mode as compared to the nominal carrier doping reveals a very rapid transfer of high energy spectral weight above the gap down to the free-carrier sector. The free-carrier optical conductivity displays “bad”metal-like behavior as a function of temperature and frequency,with indications of a partial gapping of the free-carrier response of about 30meV.

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