Abstract Submitted
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Structural instability and superconductivity in (Ir,Pt)Te2: an optical spectroscopic study A.F. FANG, G. XU, T. DONG, P. ZHENG, N.L. WANG, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China — $Ir_{1-x}Pt_xTe_2$ is an interesting system showing competing phenomenon between structural instability and superconductivity. Due to the large atomic numbers of Ir and Te, the spin-orbital coupling is expected to be strong in the system which may lead to non-conventional superconductivity. We grew single crystal samples of this system and investigated their electronic properties. In particular, we performed optical spectroscopic measurements, in combination with density function calculations, on the undoped compound $IrTe_2$ in an effort to elucidate the origin of the structural phase transition at 280 K. The measurement revealed a dramatic reconstruction of band structure and a significant reduction of conducting carriers below the phase transition. We elaborate that the transition is not driven by the density wave type instability but caused by the crystal field effect which further splits/separates the energy levels of Te (p_x, p_y) and Te p_z bands.

Nan-Lin Wang
Beijing National Laboratory for Condensed Matter Physics,
Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China

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