Closing of the pseudogap in Fe_{1.03}Te

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— The optical properties of strongly-correlated Fe_{1.03}Te have been measured over a wide frequency range for light polarized in the \(a-b\) planes at temperatures above and below the structural and magnetic transition, \(T_N \simeq 68\) K. For \(T > T_N\), in the paramagnetic state, the resistivity is increasing with decreasing temperature, and the optical conductivity is flat over much of the infrared region, except for a weak Drude-like response at low frequency. Below \(T_N\), in the antiferromagnetic state, there is dramatic increase in the low-frequency conductivity with a commensurate transfer of spectral weight (area under the conductivity curve) from high to low energy. The roughly constant value of the scattering rate indicates that it is the plasma frequency \((\omega_p)\) that is increasing. This increase in \(\omega_p^2 \propto n/m^*\) is associated with the closing of the pseudogap on the electron pocket resulting in an increase in the number of carriers \((n)\). In addition, below \(T_N\) the effective mass \((m^*)\) is also thought to decrease. Both effects lead to an increase in \(\omega_p\) on the electron pocket.\(^2\)

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