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Closing of the pseudogap in $Fe_{1.03}Te$[1] C.C. HOMES, Y.M. DAI, J. SCHNEELOCH, R.D. ZHONG, Q. LI, G.D. GU, Condensed Matter Physics and Materials Science Dept., Brookhaven National Laboratory, Upton, New York, A. AKRAP, École de Physique, Université de Genève, CH-1211 Genève 4, Switzerland
— 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 (ω_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 ω_p on the electron pocket.[2]

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[2]Y. M. Dai *et al.*, Phys. Rev. B **90**, 121114(R) (2014).

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