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Evidence of an anisotropic charge-excitation gap in stripe-ordered $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$ with $x = 1/8$ ¹ C. C. HOMES, S. V. DORDEVIC, G. D. GU, Q. LI, T. VALLA, J. M. TRANQUADA, Condensed Matter Physics & Materials Science Dept., Brookhaven National Laboratory — The *ab*-plane optical properties of a cleaved single crystal of $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$ for $x = 1/8$ ($T_c \simeq 2.4$ K) have been measured over a wide frequency and temperature range. The low-frequency conductivity is Drude-like and shows a metallic response with decreasing temperature. However, below $\simeq 60$ K, corresponding to the onset of charge-stripe order, there is a rapid loss of spectral weight below about 40 meV, resulting in a major reduction in the number of free carriers. This suggests a partial gapping of the Fermi surface. Surprisingly, the sample is still metallic and becomes a superconductor at low temperature. This material is a striking example of how charge and spin stripe order, metallic behavior and superconductivity can coexist.

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