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Optical Signatures of Weyl Points in TaAs BING XU, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, P.O. Box 603, Beijing 100190, China, YAOMIN DAI, Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA, LINGXIAO ZHAO, KAI WANG, RUN YANG, WEI ZHANG, JINYUN LIU, HONG XIAO, GENFU CHEN, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, P.O. Box 603, Beijing 100190, China, A. J. TAYLOR, D. A. YAROTSKI, R. P. PRASANKUMAR, Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA, XIANGGANG QIU, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, P.O. Box 603, Beijing 100190, China — We present a systematic study of both the temperature and frequency dependence of the optical response in TaAs, a material that has recently been realized to host the Weyl semimetal state. Our study reveals that the optical conductivity of TaAs features a narrow Drude response alongside a conspicuous linear dependence on frequency. The width of the Drude peak decreases upon cooling, following a T^2 temperature dependence which is expected for Weyl semimetals. Two linear components with distinct slopes dominate the 5-K optical conductivity. A comparison between our experimental results and theoretical calculations suggests that the linear conductivity below $\sim$230 cm^{-1} is a clear signature of the Weyl points lying in very close proximity to the Fermi energy.

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