

Abstract Submitted  
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**Terahertz conductivity of twisted bilayer graphene**<sup>1</sup> ELBERT E.M. CHIA, XINGQUAN ZOU, JINGZHI SHANG, JIANING LEAW, ZHIQIANG LUO, LIYAN LUO, SIEW ANN CHEONG, HAIBIN SU, Nanyang Technological University, JIAN-XIN ZHU, Los Alamos National Laboratory, A.H. CASTRO NETO, National University of Singapore, TING YU, Nanyang Technological University — Using terahertz time-domain spectroscopy, the real part of optical conductivity [ $\sigma_1(\omega)$ ] of twisted bilayer graphene was obtained at different temperatures (10 – 300 K) in the frequency range 0.3 – 3 THz. On top of a Drude-like response, we see a strong and narrow peak in  $\sigma_1(\omega)$  at  $\sim 2.7$  THz. We analyze the overall Drude-like response using a disorder-dependent (unitary scattering) model, then attribute the peak at 2.7 THz to an enhanced density of states at that energy, that is caused by the presence of van Hove singularities arising from a commensurate twisting of the two graphene layers.

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