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Optical absorption in trilayer graphene XIAO LI, Department of Physics, The University of Texas at Austin, FAN ZHANG, Department of Physics and Astronomy, University of Pennsylvania, QIAN NIU, Department of Physics, The University of Texas at Austin — We use a low energy effective model to analyze the optical responses of trilayer graphene samples. We first show that optical absorption of the ABA-stacked trilayer has strong dependence on both the Fermi energy and optical frequency, which is in sharp contrast to that of ABC-stacked trilayer graphene. Secondly, we are able to determine the possible existence of trigonal warping effects in the bandstructure of ABC-stacked trilayer graphene by a divergence in the absorption spectra at around 10 meV. In addition, we can partially distinguish the vairious broken symmetry states driven by electron-electron interactions in ABC-stacked trilayer graphene. In particular, the quantum anomalous Hall (QAH) state is sensitive to the polarization of the incident light, giving a way to detect its possible existence.

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