Abstract Submitted
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Landau-level characterization of AB-stacked graphite[1] YEN-HUNG HO, DE-HONE LIN, Department of Physics, National Sun Yat-Sen University, WU-PEI SU, Department of Physics, University of Houston, YU-HUANG CHIU, JEI WANG, MING-FA LIN, Department of Physics, National Cheng Kung University — Magneto-electronic structures of AB-stacked bulk graphite are investigated by the Peierls tight-binding model, which takes account of all interlayer interactions and field-induced Peierls phases simultaneously. This model is feasible for all π electronic states and capable of drawing the analytic solution for state wave functions. The external magnetic field $B_0\hat{z}$ condenses the planar motion of electrons into Landau levels, and the coupling between layers causes these levels to oscillate along k_z. The band edge states are mainly located at the Brillouin zone boundaries, where their frequencies as a function of field are closely related to the atomic hopping integrals. Landau levels are divided into two groups based on the wave function distribution. Besides, wave functions undergo a particular transition between atomic sites in response to k_z. From the behavior of energies and wave functions, we can infer the monolayer-like plus bilayer-like features in bulk graphite. The explicit characterization of Landau levels in this work could be applied to clarify and elucidate the experimental measurements on graphene layers.

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Yen-Hung Ho
Department of Physics, National Sun Yat-Sen University

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