

Abstract Submitted
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Unconventional Landau levels in biased bilayer graphene YEN-HUNG HO, WU-PEI SU, Physics Dept. and Texas Center for Superconductivity, University of Houston, Texas, USA, SING-JYUN TSAI, MING-FA LIN, Physics Dept., National Cheng Kung University, Taiwan — We utilize a generalized tight-binding model to study how the bias electric field impacts the magneto-electronic properties of graphene bilayer. With the availability of Landau wave function, the distribution among its sublattices enables the detailed observation of the Landau levels. The external electric field induces different electric potential on respective layers, which in turn lifts the inter-valley degeneracy. In addition, in a certain field range, Landau levels are coupled with each other and reveal the anomalous behavior: despite the serious hybridization of wave functions, these states in energy are still well-behaved Landau levels. These significant changes are directly reflected in the magneto-optical spectra, including the splitting of absorption peaks as well as the enhancement or quenching in response to field strength.

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