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Low-energy Landau levels and magneto-optical properties of the zigzag graphene ribbons[1] Y.C. HUANG, C.P. CHANG, M.F. LIN, Center for General Education, Kao Yuan University — The Peierl's coupling tight-binding model is employed to investigate low-energy Landau levels and magneto-absorption spectra of the zigzag graphene ribbons. The Landau-level features vary with the ribbon width: the greater the ribbon width, the more the Landau levels. What should be noticed is that the positions of Landau levels change little in spite of the increasing of the ribbon width. The Landau level energy satisfy the relation $E_n \propto \sqrt{|n|B}$, where n is subband index and B is field strength. The associated absorption spectra exhibits richer discrete Landau peaks. The transition channels related to Landau peaks are identified. The peak positions are independent of the ribbon width. Above all, a formula is presented to simulate the magneto-absorption spectra of a graphene in a very simple form.

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Y. C. Huang
Center for General Education, Kao Yuan University

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