

Abstract Submitted
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Magneto-electronic properties of nanographene ribbons under the external electric field¹ SZ-CHAO CHEN, Department of Physics in National Cheng Kung University, CHENG-PENG CHANG, Center for General Education, Tainan University of Technology, MING-FA LIN, Department of Physics in National Cheng Kung University — The electronic properties of the nanographene ribbons under the perpendicular magnetic field and external electric fields are calculated through the tight-binding model. The dispersionless quasi-Landau levels are greatly affected by the external fields. Subbands with sinusoidal (linear) dispersions are induced by the spatial modulated (uniform) electric field and some extra band-edge states are found. The external electric field can change the characteristics of the Landau wave function, such as the destruction of spatial symmetry, the change of the distribution width, and the shift of the localization position. The modification of the electronic properties would be directly reflected on the optical absorption spectra. The number, the shape, the intensity and the position of the absorption peaks are altered. The selection rule of the optical excitations between the quasi-Landau levels is disappear under the influence of the external electric field. The predicted results can be directly verified by the optical measurement.

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