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Resonant inelastic transmission through a time-modulated region in graphene LI CHANG, T. L. LIU, C. S. CHU, Department of Electrophysics, National Chaio Tung University — We investigate a number of resonant transmission processes through a time-modulated-potential region in graphene. Incident energies covering both low and high energy regimes are included, and the time-dependent transmission is treated within a tight-binding model. Three main results are obtained. Dip structures in the transmission are obtained when a band edge is involved. It can occur in the low energy regime, if the graphene is gapped, or in the high energy regime, when a graphene band edge is in the energy neighborhood. These dip structures cause significant deviation from Klein-type perfect transmission. Non-typical Fabry-Pérot interference is observed when, staying upon a dip structure condition, the transmission exhibits an oscillation that has a longer than expected period in L , the width of the time-modulated region. Central band refocusing is found in the low energy regime, where the dominance in the transmission by the central-band will occur periodically with L . In all these results, we have demonstrated and analyzed detail intricate resonant interplays between sideband processes.

Li Chang
Department of Electrophysics, National Chaio Tung University

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