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Interference between Fano resonances for impurities in graphene nanoribbon C.H. CHIU, C.S. CHU, Department of Electrophysics, National Chiao Tung University, Taiwan — The presence of impurities in a gapless armchair graphene nanoribbon (AGNR) is expected to exhibit Fano resonances in the conductance G of the AGNR. For instance, in the low energy range, when the only propagating subband is gapless, an impurity with an on-site potential $V > 0$ will give rise to the formation of the Fano resonance just above the first hole-like subband. This Fano characteristics, however, is masked in the total G by the contribution from the first hole-like subband. In this work, we show that two neighboring impurities of the same type could recover the peak-dip Fano characteristics by shifting the peak-part of the Fano structure away from the first hole-like subband. Factors that affect, separately, the peak- and the dip-part of the Fano profile will be elucidated and discussed. Furthermore, the interference of the Fano resonances from two neighboring impurities, and the sensitivity to their respective locations in the sublattice, will be studied in detail. For comparison, we also consider the case of gapped AGNRs.

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