



Chiral tunneling in single and bilayer graphene

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We review chiral (Klein) tunneling in single-layer and bilayer graphene and present its semiclassical theory, including the Berry phase and the Maslov index. Peculiarities of the chiral tunneling are naturally explained in terms of classical phase space. In a one-dimensional geometry we reduced the original Dirac equation, describing the dynamics of charge carriers in the single layer graphene, to an effective Schrödinger equation with a complex potential. This allowed us to study tunneling in details and obtain analytic formulas. Our predictions are compared with numerical results. We have also demonstrated that, for the case of asymmetric n-p-n junction in single layer graphene, there is total transmission for normal incidence only, side resonances are suppressed.

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