

Abstract Submitted  
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**Rough edges in graphene**<sup>1</sup> VLADIMIR CVETKOVIC, ZLATKO TESANOVIC, Department of Physics and Astronomy, The Johns Hopkins University, Baltimore, MD — Recent progress in fabrication of graphene and the understanding of its properties make the graphene a strong contender for a building block of future electronic devices. We analyze the effects of the scattering off rough edges on the transport in graphene nanoribbons. The confinement of the Dirac particles in a nanoribbon is achieved either by means of a large mass term in the Hamiltonian or by imposing boundary conditions appropriate for graphene sheets on the quantum mechanical wave-functions. Variations in the nanoribbon width lead to a nontrivial lateral channel-mixing and provide important limitations to quantum transport. We present a perturbative solution for the problem and derive experimentally measurable conductivity up to the leading order in the case of a nanoribbon with such randomly varying width.

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