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Effect of homogeneous strain on the Landau levels and the Klein tunneling in graphene YONATAN BETANCUR, ROMEO DE COSS, Department of Applied Physics, Cinvestav-Merida, Mexico — We analyze the effect of homogeneous strain on the Landau levels (LLs) spectra and Klein tunneling of graphene. Using the tight-binding approach to first nearest neighbors, we study the electron dynamics in graphene under homogeneous strained and uniform perpendicular magnetic field. We obtain an analytical expression for the energy of the LLs in function of strain for low magnetic fields. For Klein tunneling, we study how can change the tunneling transmission when the graphene layer is under a homogeneous strain. In particular, we analyze the effects of uniaxial, shear, and isotropic strain and combinations of these deformations. Our results show that homogeneous deformations in graphene induce changes in the LLs spectra or Klein tunneling, due to the linear dependence of the effective Fermi velocity with the tensile strain. The effects of homogeneous strain on conductivity, Hall resistance, and others electronic properties of graphene, are discussed.

Romeo de Coss
Department of Applied Physics, Cinvestav-Merida, Mexico

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