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Electronic transport in graphene ribbons with a Gausssian deformation[1] RAMON CARRILLO, CICESE-CNyN(UNAM), México, Ohio U., USA, DAIARA FARIA, ANDREA LATGÉ, UFF, Niteroi, Brazil, FRANCISCO MIRELES, CNyN(UNAM), México, UC San Diego, USA, NANCY SANDLER, Ohio U., USA — The coupling of geometrical and electronic properties is a promising avenue to engineer conduction properties in graphene. Confinement added to strain allows for interplay of different transport mechanisms with potential device applications. In particular, strain-predicted to produce localized states similar to those in an external magnetic field–can be tailored for desired transport properties. To investigate specific strain signatures on transport in confined geometries, we focus on graphene nanoribbons with different edge terminations and circularly symmetric deformations. In particular, we study nanoribbons with an inhomogeneous, out of plane Gaussian bump deformation, connected to reservoirs, with and without external magnetic field. We use the tight-binding approximation with the deformation described by elasticity theory. Using the recursive Green function algorithm, we calculate the local density of states and obtain the Landauer conductance. An enhancement of the density of states in the deformed region, similar to the one appearing with constant fields in confined regions is observed. We show how these confined states give rise to peculiar features in the emerging Landau levels and discuss their effect on the overall conductance.

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