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Tuning transport properties on graphene multiterminal structures by mechanical deformations ANDREA LATGE, VANESSA TORRES, Univ. Federal Fluminense, RJ-Brazil, DAIARA FARIA, Univ. do Estado do Rio de Janeiro, RJ-Brazil — The realization of mechanical strain on graphene structures is viewed as a promise route to tune electronic and transport properties such as changing energy band-gaps and promoting localization of states. Using continuum models, mechanical deformations are described by effective gauge fields, mirrored as pseudomagnetic fields that may reach quite high values. Interesting symmetry features are developed due to out of plane deformations on graphene; lift sublattice symmetry was predicted and observed in centrosymmetric bumps and strained nanobubbles [1]. Here we discuss the effects of Gaussian-like strain on a hexagonal graphene flake connected to three leads, modeled as perfect graphene nanoribbons. The Green function formalism is used within a tight-binding approximation. For this particular deformation sharp resonant states are achieved depending on the strained structure details. We also study a fold-strained structure [2] in which the three leads are deformed extending up to the very center of the hexagonal flake. We show that conductance suppressions can be controlled by the strain intensity and important transport features are modeled by the electronic band structure of the leads. [1]RC-Bastos et al., Phys. Rev. B 91, 125408 (2015).[2]HLim et al., Nat. Commun. 6, 8601(2015).

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