Abstract Submitted
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Graphene nanoflakes with defective edge terminations[1] IGOR ROMANOVSKY, CONSTANTINE YANNOULEAS, UZI LANDMAN, School of Physics, Georgia Institute of Technology — Systematic tight-binding investigations of the electronic spectra (as a function of the magnetic field) are presented[2] for trigonal graphene nanoflakes with reconstructed zigzag edges, where a succession of pentagons and heptagons, that is 5-7 defects, replaces the hexagons at the zigzag edge. For nanoflakes with such reczag defective edges, emphasis is placed on topological aspects and connections underlying the patterns dominating these spectra. In addition to features that are well known to appear for graphene dots with zigzag edge termination, the electronic spectra of trigonal graphene nanoflakes with reczag edge terminations exhibit unique features. These unique features appear within a stripe of negative energies $E_b < E < 0$ and along a separate regime forming a constant-energy line outside this stripe. The lower bound (E_b) specifying the energy stripe is independent of size. A main finding concerns the limited applicability of the continuous Dirac-Weyl equation, since the latter does not reproduce the special reczag features.

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[2]I. Romanovsky, C. Yannouleas, and U. Landman, Phys. Rev. B **86**, 165440 (2012)

Constantine Yannouleas
Georgia Institute of Technology

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