Abstract Submitted
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Pseudogap opening and localization in disordered graphene: frustration effects at the Fermi energy due to the underlying triangular symmetry EDUARDO BARRIOS-VARGAS, Universidad Politécnica de Catalunia, Barcelona, Spain, GERARDO G. NAUMIS[1], Instituto de Física, Universidad Nacional Autónoma de México — An intuitive explanation of the increase in localization observed near the Dirac point in doped graphene is presented. To do this, we renormalize the tight binding Hamiltonian in such a way that the honeycomb lattice maps into a triangular one [1]. Then, we investigate the frustration effects that emerge in this Hamiltonian. In this doped triangular lattice, the eigenstates have a bonding and antibonding contribution near the Dirac point, and thus there is a kind of Lifshitz tail [2]. The increase in frustration is related to an increase in localization, since the number of frustrated bonds decreases with disorder, while the frustration contribution raises. Then we show that states have a multifractal nature, with a fractal spectrum that approaches freezing as disorder increases [2]. We compute exacty the first spectral moments of the DOS using statistical averages and counting paths. Finally, the number of states at the Dirac point is obtained using a configurational counting [3].

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