

Abstract Submitted
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Electronic and magnetic properties of nanoribbons¹ GAYANATH FERNANDO, ZHIWEI ZHANG, Univ of Connecticut - Storrs, ARMEN KOCHARIAN, California State Univ - Los Angeles — We have performed tight-binding calculations with open boundary conditions on a set of twisted nanoribbons (4x100), monitoring the band structure as a function of the twist angle θ . When this angle is zero, the ribbon is rectangular and when it is 60 degrees, the ribbon is cut from a honeycomb lattice. Depending on the parameters of the tight-binding model and the filling factor, semi-metallic or insulating behavior is observed. We have also studied the electronic structure of such ribbons due to the adsorption of small atoms such as nitrogen, a magnetic field and the Rashba spin-orbit interaction. The role of the adsorbed atoms and the Rashba term with regard to the conducting properties and the symmetry breaking of the ribbons will be discussed in some detail. In addition, the effects of electronic correlations on selected small ribbons will be examined.

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