

Abstract Submitted
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Transport

Properties Of Van Der Waals Hybrid Heterostructures.¹ M. PACHECO, P. A. ORELLANA, Universidad Federico Santa Maria, A. B. FELIX, A. LATGE, Universidade Federal Fluminense — Here we study transport properties of van der Waals heterostructures composed of carbon nanotubes adsorbed on nanoribbons of distinct 2D materials. Calculations of the electronic density of states and conductance of the hybrid systems are obtained in single band tight-binding approximation in the Green function formalism by adopting real-space renormalization schemes. We show that an analytical approach may be derived when both systems are formed by the same type of atoms. In the coupled structures the different electronic paths along the ribbons and finite nanotubes lead to quantum interference effects which are reflected as Fano antiresonances in the conductance. The electronic and transport properties of these materials are modulated by changing geometrical and structural parameters, such as the nanotube diameter and the widths and edge type of the ribbons.

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