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Coherent Transport on Carbon Nanotube Junctions under a Magnetic Field MONICA PACHECO, LUIS ROSALES, ZDENKA BARTICEVIC, Universidad Santa Maria, Chile, CLAUDIA ROCHA, Trinity College, Ireland, ANDREA LATGE, Universidade Federal Fluminense, Brazil — In this work we study the effects of a magnetic field on the electronic and transport properties of different carbon-nanotube based heterostructures (CNHs) like single junctions and single and double quantum dots [1]. All of them are formed by joining two zigzag tubes using a single pentagon-heptagon pair defect. Emphasis is put on the analysis of the local density of states (LDOS), the conductance, and on the characteristic curves of current versus voltage of the CNHs. We described the system by means of a tight-binding Hamiltonian and the LDOS is calculated using real-space renormalization techniques [2]. The conductance is calculated using the Landauer formula in the Green functions formalism and the characteristic curves of current is calculated numerically through the Landauer- Büttiker formalism. All the Green functions are obtained numerically and the effects of the magnetic field are described within the Peierls phase approximation. [1] L. Rosales, C. Rocha, A. Latgé, M. Pacheco and Z. Barticevic, cond-mat/0611380, submitted to Phys. Rev. B (2006). [2] M. Ferreira, A. Latgé, R. Muniz, T. Dargam, Phys. Rev. B 62, 16040 (2000).

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