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Magnetoconductance of quantum wires[1] GERSON J. FERREIRA, FILIPE SAMMARCO, CARLOS EGUES, Universidade de Sao Paulo — At low temperatures the conductance of a quantum wires exhibit characteristic plateaus due to the quantization of the transverse modes [1]. In the presence of high in-plane magnetic fields these spin-split transverse modes cross. Recently, these crossings were observed experimentally [2] via measurements of the differential conductance as a function of the gate voltage and the in-plane magnetic-field. These show structures described as either anti-crossings or magnetic phase transitions. Motivated by our previous works on magnetotransport in 2DEGs via the Spin Density Functional Theory (SDFT) [3], here we propose a similar model to investigate the magnetoconductance of quantum wires. We use (i) the SDFT via the Kohn-Sham self-consistent scheme within the local spin density approximation to obtain the electronic structure and (ii) the Landauer-Buettiker formalism to calculate the conductance of a quantum wire. Our results show qualitative agreement with the data of Ref. [2]. [1] B. J. van Wees *et al.*, Phys. Rev. Lett. **60**, 848 (1988). [2] A. C. Graham *et al.*, Phys. Rev. Lett. **100**, 226804 (2008). [3] H. J. P. Freire, and J. C. Egues, Phys. Rev. Lett. **99**, 026801 (2007); G. J. Ferreira, and J. Carlos Egues, J. Supercond. Nov. Mag., in press; G. J. Ferreira, H. J. P. Freire, J. Carlos Egues, submitted.

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