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Ballistic hole transport and the 0.7 anomaly in p-type GaAs quantum wires A.R. HAMILTON, School of Physics, University of New South Wales, Sydney, NSW 2052, Australia, R. DANNEAU, UNSW and Low Temperature Laboratory, Helsinki University of Technology, Espoo, Finland, O. KLOCHAN, W.R. CLARKE, L.H. HO, A.P. MICOLICH, M.Y. SIMMONS, School of Physics, University of New South Wales, Sydney, NSW 2052, Australia, M. PEPPER, D.A. RITCHIE, Cavendish Laboratory, University of Cambridge, Cambridge CB3 0HE, U.K. — Studying the spin degree of freedom of charge carriers in semiconductors is an area of significant current interest. Although spin-orbit coupling is extremely strong in p- type semiconductors such as GaAs, to date there have been only a limited number of experiments on holes in p-GaAs nanostructures. We have fabricated extremely high quality 1D hole quantum wires that show up to 10 extremely clean and stable quantized conductance plateaus at B=0 [1]. In contrast to 1D electrons, we observe an extreme anisotropy of the Zeeman spin splitting of the 1D energy levels depending on whether the magnetic field is parallel or perpendicular to the quantum wire [2]. We use this anisotropy to show that the 0.7 feature and zero bias anomaly are both spin related in hole quantum wires [3]. [1] O. Klochan *et al*, APL 89, 092105 (2006); R. Danneau *et al*, ibid 88, 012107 (2006). [2] R. Danneau*et al*, PRL 97, 026403 (2006). [3]R. Danneau, et al, PRL (in press).

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