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Magneto-transport studies of a few hole GaAs double quantum dot in tilted magnetic fields. SERGEI STUDENIKIN, ALEX BOGAN, National Research Council of Canada, LISA TRACY, Sandia National Laboratories, LOUIS GAUDREAU, ANDY SACHRAJDA, MAREK KORKUSINSKI, National Research Council of Canada, JOHN RENO, TERRY HARGETT, Sandia National Laboratories — Compared to equivalent electron devices, single-hole spins interact weakly with lattice nuclear spins leading to extended quantum coherence times. This makes p-type Quantum Dots (QD) particularly attractive for practical quantum devices such as qubit circuits, quantum repeaters, quantum sensors etc. where long coherence time is required. Another property of holes is the possibility to tune their g-factor as a result of the strong anisotropy of the valance band. Hole g-factors can be conveniently tuned *in situ* from a large value to almost zero by tilting the magnetic field relative to the 2D hole gas surface normal. [1] In this work we explore high-bias magneto-transport properties of a p-type double quantum dot (DQD) device fabricated from a GaAs/AlGaAs heterostructures using lateral split-gate technology.[2] A charge detection technique is used to monitor number of holes and tune the p-DQD in a single hole regime around (1,1) and (2,0) occupation states where Pauli spin-blockaded transport is expected. Four states are identified in quantizing magnetic fields within the high-bias current stripe – three-fold triplet and a singlet which allows determining effective heavy hole g-factor as a function of the tilt angle from 90 to 0 degrees. [1] G. Ares et al., Phys.Rev. Lett. 110, .046602 (2013); [2] L. A. Tracy,et al., App. Phys. Lett. 104**,** 123101 (2014).

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