

Abstract Submitted
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A tunable few electron triple quantum dot¹ LOUIS GAUDREAU, National Research Council Canada, Université de Sherbrooke, ALICIA KAM, GHISLAIN GRANGER, PIOTR ZAWADZKI, SERGEI STUDENIKIN, AASHISH CLERK, ANDREW SACHRAJDA — We report on a new design to realize a fully tunable lateral triple quantum dot. The electrostatically defined quantum dots are arranged in series. The number of electrons in the quantum dots can be controlled and fundamental electronic configurations such as the (0,0,0) and (1,1,1) are obtained. Control of the number of electrons is important to perform quantum information processes using electron spins as qubits. Individual control of the tunnel barriers between the dots as well as resonant conditions called quadruple points where the chemical potential of the three quantum dots are aligned are achieved. A neighboring quantum point contact is used as a charge sensor to map out the charge stability diagram. We explore the back-action effects of the charge sensor on the triple quantum dot system and observe a series of additional resonances directly linked to the bias applied across the charge sensor.

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