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【846】Charge sensing of Ge/Si Core/Shell nanowire quantum dots using a high-impedance NbTiN resonator

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Hole spins in Ge/Si core/shell nanowires show a strong and electrically tunable spin-orbit (SO) interaction, allowing strong coupling between spins and photons. A highly tunable hole spin qubit was demonstrated using this system. However, the readout so far has relied on transport, so the qubit was not operated in the few-hole regime.

We present spectroscopy measurements on Ge/Si nanowire double quantum dot system using a high-impedance NbTiN resonator. Once the DC transport was fully suppressed, we were able to read dozens of transitions using solely spectroscopy. We find first indications of depletion to the last hole. We are aiming now to achieve spin-photon coupling in our system.

Theoretical Work

Authors: UNGERER, Jann Hinnerk (University of Basel); CHEVALIER KWON, Pierre (Basel university)

Co-authors: KONONOV, Artem (University of Basel); SCHÖNENBERGER, Christian (University of Basel); ZUMBÜHL, Dominik (University of Basel); BAKKERS, Erik (Department of Applied Physics, Eindhoven University of Technology, The Netherlands); RIDDERBOS, Joost (University of Basel); PATLATIUK, Taras (University of Basel)

Presenter: CHEVALIER KWON, Pierre (Basel university)

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