

High Fidelity and Stochastic Spin Noise in Multi-Qubit Devices

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Raising fidelities of quantum operations is an important prerequisite for implementing fault-tolerant quantum computing, and has recently been tackled using spin qubits made in isotopically purified ^{28}Si and ^{28}Ge quantum dots. We have recently studied the way to further increase the qubit fidelities in $^{28}\text{Si}/\text{SiGe}$ more than before. We have used the five-qubit device and finally achieved the single qubit fidelity $> 99.99\%$ by optimizing the gate-pulses to reduce the gate errors and crosstalk between qubits. I will discuss the charge noise in the background as a limiting noise source to the fidelity.