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**Title:** Quantum register based on quantum dots in transistor channel

**Annotation**

Quantum register consisting of field-defined quantum dots in a silicon nanowire transistor channel is proposed. The possibility of all necessary one-qubit and two-qubit operations, initialization and read-out is demonstrated. The suppression of decoherence sources: persistent Coulomb interaction, phonons, charging of stray traps, noise of controlling electrodes is considered. The attention is also paid to the influence of polarization of environment (in particular, metallic electrodes) on a qubit evolution.