



Optical approach to spin qubits

Spin degree of freedom of localized carriers is considered as a candidate for implementation of a quantum bit (qubit). The strategies to realize the all-optical qubit initialization, readout and coherent control based on single carriers confined in semiconductor quantum dots are discussed. Further, we consider the two entangled quantum bits based on two vertically-stacked singly-charged quantum dots and demonstrate the realization of optical control for a single and two-qubit states.

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room P 603, Mon. 21.01.2019, 13:30