Proposed Coupling of an Electron Spin in a Semiconductor Quantum Dot to a Nanosize Optical Cavity

We propose a scheme to efficiently couple a single quantum dot electron spin to an optical nano-cavity, which enables us to simultaneously benefit from a cavity as an efficient photonic interface, as well as to perform high fidelity (nearly 100%) spin initialization and manipulation achievable in bulk semiconductors. Moreover, the presence of the cavity speeds up the spin initialization process beyond the GHz range.
Electrospinning, Magnetic moments, Spin dynamics, Semiconductor quantum dots

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