

Abstract Submitted
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Dynamical spin-spin coupling of quantum dots¹ VAHRAM GRIGORYAN, JIANG XIAO, Fudan Univ, A SPINTRONICS GROUP TEAM — We carried out a nested Schrieffer-Wolff transformation of an Anderson two-impurity Hamiltonian to study the spin-spin coupling between two dynamical quantum dots under the influence of rotating transverse magnetic field. As a result of the rotating field, we predict a novel Ising type spin-spin coupling mechanism between quantum dots, whose strength is tunable via the magnitude of the rotating field. Due to its dynamical origin, this new coupling mechanism is qualitatively different from the all existing static couplings such as RKKY, while the strength could be comparable to the strength of the RKKY coupling. The dynamical coupling with the intrinsic RKKY coupling enables to construct a four level system of maximally entangled Bell states in a controllable manner.

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