# Chaotic spin-dependent electron dynamics in a field-driven double dot potential

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## Annotation

Dynamics of the electron confined in the double quantum dot has been studied in the presenceof the constant external magnetic field. Orbital motion of the electron in the quantum dot is linked to the spin dynamics through the spin orbit interaction term of the Dresselhaus type. It has been shown that spin dynamics can be controlled via the applied external strong magnetic field. Effective time dependent one dimensional Hamiltonian model is derived for the orbital motion of the electron in the quantum dot. It is shown that depending on the strength of the spin–orbit coupling and the energy of the system, the electronic orbital motion undergoes a transition from the regular to the chaotic regime. We found qriteria of qaos and estimated width of the stoqastic layer.

**references:**

L. Chotorlishvili , Z. Toklikishvili , A. Komnik, J. Berakdar, “Chaotic spin-dependent electron dynamics in a field-driven double dot potential”, Physics Letters A 377 (2012) 69–72;