Prediction of resonant all-electric spin pumping with spin-orbit coupling

Tue, 2010-10-05 18:01 - Ingo Kamleitner [1] **Date:** 2010-07-28
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Reference:
Phys. Rev. B 82, 041309(R) (2010)

URL:
http://link.aps.org/doi/10.1103/PhysRevB.82.041309 [2]

All-electric devices for the generation and filtering of spin currents are of crucial importance for spintronics experiments and applications. Here we consider a quantum dot with spin-orbit interaction coupled to two metallic leads. After analyzing, the conditions for having nonvanishing spin currents in an adiabatically driven two-terminal device, we focus on a dot with two resonant orbitals and we show by specific examples that both spin filtering and pure spin current generation can be achieved. Finally, we discuss the effect of the Coulomb interaction.

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- QIPC [4]
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