Abstract Submitted
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Effect of photon-assisted tunneling through the leads on spin current polarization in ac-driven quantum dot molecules[1] ERNESTO COTA, Universidad Nacional Autonoma de Mexico, RAFAEL SANCHEZ, RAMON AGUADO, GLORIA PLATERO, Instituto de Ciencia de Materiales de Madrid-CSIC — A new scheme for realizing spin pumping and spin filtering has been recently proposed using an ac-driven double quantum dot in the Coulomb blockade regime. Using a master equation approach for the density matrix, it was shown[1] that the spin polarization of the current through the system can be controlled by tuning the parameters (amplitude and frequency) of the ac-field. In the present work we extend our previous model to include photon-assisted tunneling through the contact barriers. This introduces new features in the current due to absorption and emission processes affecting the spin polarization of the current. We discuss these new features, their dependence on the ac-field parameters and the effects on the robustness of the proposed device as a spin pump and spin filter. In particular, we find that the spin filtering property depends strongly on the intensity of the applied ac field. The effect of photoassisted cotunneling on the spin current polarization will also be discussed.[1]E.Cota, R. Aguado and G. Platero, Phys. Rev. Lett. **94**, 107202 (2005)

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