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**Spin singlet-triplet relaxation times in Si double quantum dots**

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— Recent observation of spin-sensitive transport in semiconductor quantum dots presents a new way of spin manipulation in nanoscale devices. Spin-flip processes are essential for understanding the potential of these systems. Following experiments by A. C. Johnson *et.al.* Phys.Rev.B **72**, 165308 (2005) and N. Shaji *et.al.* [cond-mat/0708.0794] we calculate the relaxation times of different spin configurations in double quantum dots. For two-electron states, we evaluate the effects of leads on the spin-flip transitions, compare these effects with relevant spin-orbit and nuclear spin relaxation mechanisms, and calculate the electric current profile, including structure of the peaks and temperature dependence of the transport in the suppressed ('valley') region.

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