

Noise enhancement due to telegraphic switching in a two-level quantum dot coupled to spin-polarized leads

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As already known, in quantum dots attached to spin-polarized leads the competition between transport of electrons with different spin polarizations may lead to super-Poissonian noise enhancement due to phenomenon referred to as the dynamical channel blockade [1]. This study shows, that in the case of two-level quantum dot the another mechanism of the noise enhancement may appear – the telegraphic switching between different transport channels associated with the spin state of a quantum dot. In contrast to the dynamical channel blockade, the telegraphic switching is associated with the breaking of the renewal property – the subsequent waiting times between successive tunneling events are correlated [2]. Correlations between waiting times can be detected by measuring the second-order current correlation function, which enables the distinction between different mechanisms of the noise enhancement.

References:

- [1] B. R. Bułka, *Phys. Rev. B* **62**, 1186 (2000); W. Belzig, *Phys. Rev. B* **71**, 161301(R) (2005).
- [2] K. Ptaszyński, *Phys. Rev. B* **95**, 045306 (2017).

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