

Statistics of tunneling events in three-terminal hybrid devices with quantum dot

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To fully characterize the charge current fluctuations in mesoscopic systems it is necessary to study statistics of tunneling events, *e.g.* by means of the full counting statistics (FCS) or the waiting time distribution (WTD) in the long or the short time limit, respectively. We investigate here the WTD, defined as the probability for a delay time between two subsequent transitions of particles, and consider it for a quantum dot (QD) strongly coupled to a superconducting and weakly coupled to two normal electrodes. Our study focuses on the WTD in the subgap transport, when coherent exchange of the Cooper pairs occurs between the QD and the superconductor. The dynamics can be described in terms of a Markovian generalized master equation for the reduced density matrix [1]. We observe coherent oscillations between the Andreev bound states in the correlated jumps, both for the local and non-local WTDs.

References:

[1] L. Rajabi, Ch. Pörtl, and M. Governale, *Phys. Rev. Lett.* **111**, 067002 (2013).

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