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**Shot noise in resonant tunneling through a two-level system**
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— We analyze the shot noise in electron tunneling through a two-level system connected to two leads taking account for the presence of coherent transitions between the two levels and Coulomb blockade effects. As particular implementations of such a system we study: a) a single quantum dot connected to two ferromagnetic leads with weak intradot spin-flip scattering, and b) two sequentially coupled quantum dots with coherent tunneling between them. In case a) we observe the shot noise enhancement with increasing the degree of polarization of the leads in both, parallel and antiparallel, lead configurations. The spin-flip scattering, on the other hand, causes the shot noise reduction. The frequency-dependent shot noise shows a peak in the parallel configuration but a dip in the antiparallel configuration at the Rabi frequency, reflecting different symmetries of states carrying current. In case b) we observe the appearance of the negative differential conductance in the current-voltage characteristic as a result of the enhanced decoherence rate induced by the presence of the second electron inside the system. The shot noise experiences an enhancement but remains sub-Poissonian. The frequency-dependent shot noise exhibits a dip at the tunneling frequency.

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