Quantum flicker noise demonstrated in molecular junctions

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We report on a quantum form of electronic flicker noise that contains valuable information on quantum transport [1,2]. This noise is experimentally studied in molecular junctions, and theoretically analyzed considering quantum interference due to fluctuating scatterers. The identified form of flicker noise uniquely depends on the distribution of transmission channels, which are a central characteristic of quantum conductors. This dependence opens the way for the application of flicker noise as a diagnostic probe for fundamental quantum transport properties, a role that to date has been performed by the experimentally less accessible shot noise.

[1] O. Shein-Lumbroso, J. Liu, A. Shastry, D. Segal and O. Tal, Phys. Rev. Lett. 128 (2022) 237701.

[2] M. Rini, Phys. 15 (2022) s78.