

Current Fluctuation in a Kondo-correlated Quantum Dot

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As the Kondo effect is a typical many body effect associated with spin, its realization in a quantum dot (QD) offers us an ideal stage to test various theoretical predictions for Kondo physics. Recently, the dynamical aspects of Kondo physics are attracting great interest.

We measure the current and the shot noise in a quantum dot in the Kondo regime to address the nonequilibrium properties of the Kondo effect [1]. By systematically tuning the temperature and gate voltages to define the level positions in the quantum dot, we observe an enhancement of the shot noise as temperature decreases below the Kondo temperature, which indicates that the two-particle scattering process grows as the Kondo state evolves. Below the Kondo temperature, the Fano factor defined at finite temperature is found to exceed the expected value of unity from the noninteracting model, reaching 1.8 ± 0.2 .

References

1. Y. Yamauchi, K. Sekiguchi, K. Chida, T. Arakawa, S. Nakamura, K.Kobayashi, T. Ono, T. Fujii, R. Sakano, *Phys. Rev. Lett.* **106**, 176601 (2011).