

Nonequilibrium Transport through Quantum Dots

Kazuo Ueda and Shunsuke Kirino

Institute for Solid State Physics

University of Tokyo

It has been established that the Kondo effect is relevant to transport properties through quantum dots. New aspects of the Kondo transport compared with the conventional Kondo effect of magnetic impurities are the following. Firstly, the transport is a typical phenomena in nonequilibrium situation and only in the limit of small bias potential it can be described by the equilibrium properties through the Kubo formula. Secondly the phase relation between a localized orbital at a dot and continuous spectrum of leads may be modified and controlled by designing a current path in contrast to the usual situation of a magnetic impurity which sits in the middle of a Fermi sea. The latter aspect is known as the Fano effect. In my talk I will discuss the nonequilibrium properties and also Fano-Kondo effects of the transport through quantum dots.

[1] S. Kirino, T. Fujii, J. Zhao and K. Ueda: J. Phys. Soc. Jpn **77** (2008) 084704.