Two-stage Kondo effect

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We consider a quantum dot with few orbital levels occupied by two electrons connected to two electric terminals. The generic model is given by a multi-level Anderson Hamiltonian. The weak- coupling theory at the particle-hole symmetric point is governed by a two-channel S = 1 Kondo model characterized by intrinsic channels asymmetry. Based on a conformal field theory approach we derived an effective Hamiltonian at a strong-coupling fixed point. The Hamiltonian capturing the low-energy physics of a two-stage Kondo screening represents the quantum impurity by a two - color local Fermi- liquid. Using non-equilibrium perturbation theory around the strong-coupling fixed point we analyse the transport properties of the model at finite temperature, Zeeman magnetic field and source-drain voltage applied across the quantum dot. We compute the Fermi-liquid transport constants and discuss different universality classes associated with emergent symmetries.