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Conductance signatures of a quantum-critical transition and a Kondo filtered resonance in double quantum dots[1] LUIS DIAS, NANCY SANDLER, Ohio University, KEVIN INGERSENT, University of Florida, SERGIO ULLOA, Ohio Univeristy — We present conductance results for double quantum dot (DQD) systems containing one dot in the Kondo regime coupled to an effectively noninteracting dot. The system is mapped onto a single impurity Anderson model with a structured (nonconstant) density of states [1]. The linear conductance is obtained using the DQD's Green's function calculated from numerical renormalization-group calculations for both side-dot and parallel configurations. In the side dot case, the conductance shows signatures of the band filtering through the resonant dot. This mechanism can be interpreted as an interference between many-body and single-particle states, splitting the Kondo resonance while preserving the Kondo singlet ground-state. In the parallel configuration, interference between conducting channels through the dots create a pseudogapped effective density of states [1]. We discuss possible approaches for detecting the quantum-critical point separating Kondo and non-Kondo phases in conductance measurements.

[1] L.G.G.V. Dias da Silva et al, PRL 97 096603 (2006)

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Luis Dias
Ohio University

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