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Coupled Quantum Dots in the Kondo regime: interference and filtering effects. LUIS DIAS DA SILVA, NANCY SANDLER, Department of Physics and Astronomy, Ohio University, KEVIN INGERSENT, Department of Physics, University of Florida, SERGIO ULLOA, Department of Physics and Astronomy, Ohio University — Double quantum-dot systems (DQDs) provide a vast array of possibilities for both theoretical and experimental investigations of the Kondo regime. In this work, we propose DQDs as a possible experimental realization of a Kondo impurity coupled to an effective structured (non-constant) density of states (DoS). We consider a DQD in parallel configuration coupled to metallic leads. By changing the lead-dot and dot-dot couplings, the effective hybridization function for an individual dot displays sharp resonances and/or pseudogaps, allowing for an experimental probe into the transition between both regimes. Using numerical renormalization group methods, we calculate the dot's spectral function in different regimes. For a dot weakly coupled to the leads and strongly coupled to the second dot, the effective DoS has a sharp resonance with width Δ and the spectral density shows a splitting in the Kondo resonance for $T_K > \Delta$, although the Kondo singlet is *preserved*. Furthermore, for small inter-dot coupling, second order dot-dot interactions through the conduction electrons lead to the formation of a pseudo-gap. The spectral density goes to zero as a power-law $|\epsilon - \epsilon_F|^2$ and the Kondo screening is suppressed. Supported by NFS-NIRT.

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