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Transport across two interacting quantum dots: Bulk Kondo, Kondo box, and molecular regimes[1] LAERCIO COSTA RIBEIRO, Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET-RJ/UnED-NI), RJ 26041-271, Brazil, IGNACIO HAMAD, Instituto de Física Rosario, Universidad Nacional de Rosario, Bv. 27 de Febrero 210 bis, Rosario (2000), Argentina, GUILLERMO CHIAPPE, Departmento de Física Aplicada, Universidad de Alicante, San Vicente del Raspeig, Alicante 03690, Spain, ENRIQUE VICTORIANO ANDA, Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio) — We analyze the transport properties of a double quantum dot device with both dots coupled to perfect conducting leads and to a finite chain of N noninteracting sites connecting both of them. The interdot chain strongly influences the transport across the system and the local density of states of the dots. We study the case of a small number of sites, so that Kondo box effects are present, varying the coupling between the dots and the chain. For odd N and small coupling between the interdot chain and the dots, a state with two coexisting Kondo regimes develops: the bulk Kondo due to the quantum dots connected to leads and the one produced by the screening of the quantum dot spins by the spin in the finite chain at the Fermi level. As the coupling to the interdot chain increases, there is a crossover to a molecular Kondo effect, due to the screening of the molecule (formed by the finite chain and the quantum dots) spin by the leads. For even N the two Kondo temperatures regime does not develop and the physics is dominated by the usual competition between Kondo and antiferromagnetism between the quantum dots.

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