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SU(4) Kondo effect in coupled quantum dots in parallel: Evidence of marginal fixed point MIKIO ETO, Keio University — We theoretically study the Kondo effect in coupled quantum dots in parallel, using the scaling and NRG methods. The double quantum dots are capacitively coupled to each other, whereas they are attached to separate leads.[1] The SU(4) Kondo effect is realized when the energy levels are matched between the quantum dots. We show that (i) the Kondo temperature T_K decreases with increasing $|\Delta|$, where Δ is the level separation between the dots, obeying a power law [crossover from SU(4) to SU(2) Kondo effect]. (ii) The exponent of the power law is not a universal value in general.[2] This is an evidence of the marginal fixed point of SU(4) Kondo effect.[3] (iii) The conductance through one of the quantum dots may show a non-monotonic behavior as a function of temperature T although the total conductance is a universal function of T/T_K.

[1]A. Huebel, J. Weis and K.von Klitzing, 17th International Conference on the Electronic Properties of Two-Dimensional Systems (EP2DS, 2007).
[2]M. Eto, J. Phys. Soc. Jpn.**74**, 95 (2005).
[3]L. Borda *et al.*, Phys. Rev. Lett. **90**, 026602 (2003)

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