

Abstract Submitted
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Kondo effects in triangular triple quantum dots AKIRA OGURI, TAKAHIDE NUMATA, YUNORI NISIKAWA, Osaka City University, A.C. HEWSON, Imperial College — We study the conductance through a triangular triple quantum dot, which is connected to two noninteracting leads, using the numerical renormalization group (NRG). It is found that the system shows a variety of Kondo effects depending on the filling of the triangle. The $SU(4)$ Kondo effect occurs at half-filling, and a sharp conductance dip due to a phase lapse appears in the gate-voltage dependence. Furthermore, when four electrons occupy the three sites on average, a local $S = 1$ moment, which is caused by the Nagaoka mechanism, is induced along the triangle. The temperature dependence of the entropy and spin susceptibility of the triangle shows that this moment is screened by the conduction electrons via two separate stages at different temperatures. The two-terminal and four-terminal conductances show a clear difference at the gate voltages, where the $SU(4)$ or the $S = 1$ Kondo effects occur[1]. We will also discuss effects of deformations of the triangular configuration, caused by the inhomogeneity in the inter-dot couplings and in the gate voltages.

[1] T.Numata, Y.Nisikawa, A.Oguri, and A.C.Hewson: arXiv:0808.3496.

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