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Spatial range of the Kondo effect[1] C.A. BÜSSER, G. B. MARTINS, Oakland University, MI, USA, L. COSTA RIBEIRO, E. V. ANDA, PUC-Rio, RJ, Brazil, E. DAGOTTO, Univeristy of Tennessee and ORNL, TN, USA — The objective of this work is to discuss the spatial range of the effect caused by the Coulomb interaction localized at an impurity center. The numerical method we use, the embedded cluster approximation (ECA) and the finite U slave bosons mean field (FU-SBMF), are developed to treat localized impurity systems. It is important to note that, contrary to other techniques, ECA and FUSB can work in real space. Instead of using the spin-spin correlation to determine the length of the Kondo cloud, we will use the local density of states (LDOS) on the lead, far from the impurity. The presence of the impurity produce a disturbance in the LDOS of sites away from it. In this work, we propose to use this distortion to evaluate the spatial range of the Kondo effect. We observe that the effect of the distortion decays exponentially as a function of the distance from the impurity. With that in mind, a characteristic length $\hat{R}_{\rm K}$ can be easily defined. When the coupling between the impurity and the metal is increased, we verify that $\hat{R}_{\rm K} \sim 1/T_{\rm K}$. We will also discuss how the magnetic field and temperature affect the length $R_{\rm K}$.

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