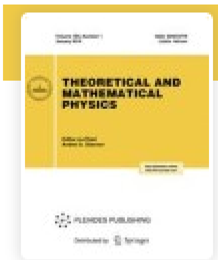

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The diagram theory for the degenerate two-orbital hubbard model

Moskalenko V. A., Dohotaru L. A., Chebotar' I. D., Digor D. F.

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Abstract

We investigate the minimal model that takes orbital degrees of freedom into account: the degenerate two-orbital Hubbard model. Our consideration includes the intraatomic Coulomb interaction of two electrons with opposite spins on the same orbital and on different orbitals and interorbital hopping of tunneling electrons. We take the influence of states caused by Hund's rule coupling on the metal-insulator phase transition into account. We generalize the diagram theory developed for strongly correlated orbitally nondegenerate systems to the case of orbital degeneration. For the one-particle renormalized Green's function, we establish an equation of Dyson type for calculating the system spectral function using a simple approximation based on summing chain diagrams.

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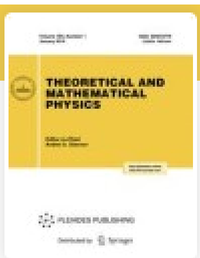

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