

Some exact results for the extended Hubbard model with intersite charge and magnetic interactions at atomic limit

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The extended Hubbard model in the zero-bandwidth limit is studied. The effective Hamiltonian consists of (i) the on-site interaction U , (ii) the intersite density-density interaction W and (iii) the intersite Ising-like magnetic exchange interaction J between nearest-neighbors [1,2]. We present rigorous results obtained within the transfer-matrix method for one dimensional chain in two particular cases: (a) $W = 0$ and $n = 1$ (U - J model); (b) $U \rightarrow +\infty$ and $n = 1/2$ ($W \neq 0$, $J \neq 0$). We obtain the exact formulas for the partition function and free energy what enable to calculate the thermodynamic properties such as entropy S , specific heat C and double occupancy per site D .

References:

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