

STABLE AND METASTABLE PHASES IN THE ATOMIC LIMIT OF THE EXTENDED HUBBARD MODEL

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We have studied a simple effective model of charge ordered insulators. The tight binding Hamiltonian consists of the effective on-site interaction U and the intersite density-density interaction W between nearest-neighbors. In the analysis of the phase diagrams and thermodynamic properties of this model we have adopted the variational approach, which treats the on-site interaction term exactly and the intersite interactions within the mean-field approximation. Our investigations of the general case (as a function of the electron concentration n and as a function of the chemical potential μ) have shown that a tricritical line and a critical-end-point line, a line of isolated critical points (which meet at a new multicritical point) connected with (first- and second order) transitions between stable phases are present in the phase diagram of the model. In this report we concentrate on the metastable phases and transitions between them. One finds that the first- and second order transitions between metastable phases can exist in the system. These transitions occur also in the neighborhood of second order transition between stable phases.

9.7 cm

13.4 cm

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