Electron phase separation involving superconductivity in the extended Hubbard models with pair hopping interaction

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In this work the extended Hubbard models with pair hopping interaction (at atomic limit) are investigated within the variational approach, which treats the on-site interaction term exactly and the intersite interactions within the mean-field approximation (exact in $d \rightarrow +\infty$) [1-4]. The exact results derived for $d = 1$ and approximated results for various lattices at $d < +\infty$ are also presented [1,2,4]. We analyze mutual stability of the superconducting (SS) phase and charge (CO) or magnetic (F) orderings as well as homogeneous mixed phases [3,4]. Our results show that the SS phase can coexist with the CO or F phases only in states with electron phase separation.

References:
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