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Phase separation in Hubbard model ALEXANDRU MACRIDIN, MARK JARRELL, University of Cincinnati, THOMAS PRUSCHKE, University of Gottingen, THOMAS MAIER, Oak Ridge National Laboratory — We investigate the phase separation in the Hubbard model by employing the dynamical cluster approximation. We find that an enhanced compressibility in the underdoped regime is a general characteristic of the Hubbard model for the most regions of the parameter space. Moreover, a next-nearest-neighbor hopping t' corresponding to electron-doped cuprates will drive a finite temperature transition into a phase separated state consisting of an undoped phase and a rich doped one. A Coulomb repulsion $U \gtrsim W$ is a necessary condition for the transition to take place. Phase separation and charge ordering scenarios for high T_c are becoming increasingly relevant in the highlight of the recent experiments which reveal that charge modulation is an intrinsic characteristic of hole-doped cuprates. We find that phase separation is more prevalent when $t' > 0$, consistent with the electron-doped cuprates.

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