

Abstract Submitted
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Polarization induced phase separation and re-entrant transition of two component lattice fermions in one dimension THEJA DESILVA, Georgia Regents University — By investigating the compressibility of one dimensional lattice fermions at various filling factors, we study phase separation and re-entrant transition within the framework of Bethe ansatz method. We model the system by repulsive Hubbard model and calculate compressibility as functions of polarization for arbitrary values of chemical potential, temperature, and interaction strength. For filling factors $0 < n < 1$, the compressibility is a non-monotonic function of polarization at all thermodynamic parameters. The compressibility reveals phase transition into phase separated state for both low and intermediate temperatures, as well as intermediate interactions as one increases the polarization. For certain filling factors, we find re-entrant transition into the mixed phase at a higher polarization.

Theja DeSilva
Georgia Regents University

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