

A study on the effect of ring exchange interaction in a two-leg Bose-Hubbard ladder

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In this work, we study the effect of ring exchange interaction in a two-leg Bose-Hubbard ladder using the DMRG (Density matrix renormalization group) technique. In realistic setups, a two-leg system is expected to be influenced by ring exchange [1, 2] mechanism apart from extended density-density interaction. In this regard, one can think of a two-band system and investigate different phases of matter emerging due to such interactions. The significance of such exchange terms has been known for a while [1, 2, 3]. In light of recent experimental observation [4] of the bose-metal phase, the study of such exchange interaction has become crucial for gaining more understanding of interacting bosonic systems.

References

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