

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Insulating charge density wave for a half-filled SU(N) Hubbard model with an attractive on-site interaction in one dimension JIZE ZHAO, KAZUO UEDA, XIAOQUN WANG, The Institute for Solid State Physics, University of Tokyo — We study a one-dimensional SU(N) Hubbard model with an attractive on-site interaction and $N > 2$ at half-filling on the bipartite lattice using density-matrix renormalization-group method and a perturbation theory. We find that the ground state of the SU(N) Hubbard model is a charge density wave state with two-fold degeneracy. All the excitations are found to be gapful, resulting in an insulating ground state, in contrast to that in the SU(2) case. Moreover, the charge gap is equal to the Cooperon gap, which behaves as $-2Nt^2/(N-1)U$ in the strong coupling regime. However, the spin gap Δ_s and the quasiparticle gap Δ_1 as well open exponentially in the weak coupling region, while in the strong coupling region, they linearly depend on U such that $\Delta_s \sim -U(N-1)$ and $\Delta_1 \sim -U(N-1)/2$.

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Date submitted: 13 Nov 2007

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