

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Correlations in Dynamic Hubbard Model: A DMRG Study FATIH

DOGAN, FRANK MARSIGLIO, University of Alberta, Edmonton, Canada — The Dynamic Hubbard model has been introduced to study how holes behave in the Hubbard Model with dynamic degrees of freedom modelled by pseudo-spins. It has previously been analyzed using exact diagonalization on small clusters. However the lattice sizes used are not sufficiently large to understand the behaviour of the system in the thermodynamic limit. We present our analysis using the density-matrix-renormalization- group (DMRG) to understand the behaviour of two holes for different system sizes. We observed a decrease in kinetic energy, and an increase in the effective nearest neighbor attraction, even for moderate on-site repulsion, which indicates pairing of the holes through effective nearest neighbor attraction.

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Date submitted: 12 Jan 2006

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