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Finite matrix Methods Applied to the Hubbard Model R.K. MURAWSKI, Drew University, W.J. MASSANO, SUNY Maritime, V. FESSATIDIS, Fordham University, J.D. MANCINI, Kingsborough College of CUNY, S.P. BOWEN, Chicago State University — For a number of years, finite matrix methods, have provided theorists with a viable methodology for calculating ground state energies in many body systems. In particular, those schemes derivable from the "t-expansion" of Horn and Weinstein [Phys. Rev. **D30**, 1256 (1984)]: Connected Moments Expansion (CMX), Alternate Moments Expansion (AMX), Generalized Moments Expansion (GMX) and the Canonical Sequence Method (CSM) have yielded viable results in a variety of fields such as atomic, nuclear and molecular physics. In this study we wish to expound upon the work of Lee and Lo [Nuovo Cimento **15D**, 1483 (1993)] who applied the CMX to evaluate the ground state energy of the half-filled Hubbard model for both the linear chain and the square lattice. Here we will apply the recently derived GMX to this system as well as the CSM scheme. These results will then be compared to a Lanczos tridiagonalization calculation. Comments will then be made regarding the usefulness of such methods to true many body systems.

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