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Variational Moments Expansion R.K. MURAWSKI, Drew University, J. MIKALOPAS, J.D. MANCINI, Kingsborough College of CUNY, V. FESSATIDIS, Fordham University, S.P. BOWEN, Chicago State University — A number of years ago, a generalized moments expansion, GMX(m, n) was derived as a novel way to calculate ground-state energies of many body systems [PLA **349**, 320, (2006)]. This scheme was based on a theorem by Horn and Weinstein for the "t-expansion" and was shown to be a generalization of an earlier connected moments expansion CMX, in which CMX = GMX $(1, 1)$. Here we wish to extend the GMX method, which involves matrix elements of moments of the Hamiltonian, to include a recent variational ansatz in which a variational basis is constructed by taking successive derivatives with respect to a (variational) parameter λ that is introduced in a trial ket. The GMX expression for the ground state, $E_0(\lambda)$ is then minimized within a given subspace of the Hilbert space.

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