Analytic Properties of Moments Matrices  WILLIAM J. MAS-
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University, ROBERT K. MURAWSKI, Texas A&M University — Associated with 
each matrix element of the recently developed Generalized Moments Expansion, 
GMX(n,m) there is a unique expansion for the ground state energy in terms of the 
“connected moments” $I_k$ of the Hamiltonian (Phys. Lett. A349, 320 [2006]). That 
is, for any set \{n,m\} a polynomial in the $I_k$’s may be generated to any desired 
order $L$, which is dependent upon the highest moment calculated. Here we wish to 
study the eigenvectors and eigenvalues of the GMX matrix itself. Furthermore we 
investigate the interplay between the set \{n,m\} and the order $L$ of the matrix in 
determining which combination \{n,m,L\} yields the “best” (i.e. most convergent) 
result for the ground state energy.

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