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Translational Invariance in Parameter Space: An Alternate Variational Coupled Cluster Method V. FESSATIDIS, Fordham University, J.D. MANCINI, Kingsborough College of CUNY, S.P. BOWEN, Chicago State University, R.K. MURAWSKI, Drew University — Over the past few decades the Coupled Cluster Method (CCM) has proven to be a useful tool for both chemists and physicists in the calculation of ground state energies. The CCM scheme is also a viable method in calculating the correlation energies of a number of diverse quantum systems such as atoms, molecules, electron gases as well as for magnetic lattice systems. In this work a new many-body calculational scheme is developed by merging the CCM scheme with a relatively new variational ansatz wherein a basis is constructed by taking derivatives with respect to the variational parameters of the system. A novel translational operator is then introduced leading to a generalization of Bloch's Theorem in parameter space.

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