

Abstract Submitted  
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**The Truncated Eigenfermion Decomposition applied to the Hubbard model**<sup>1</sup> JONATHAN MOUSSA, JAMES CHELIKOWSKY, University of Texas at Austin — The Truncated Eigenfermion Decomposition provides a unified computational framework for the calculation of eigenvalues, reduced density matrices, and transition density matrices of many-fermion Hamiltonians. Computations are made tractable by truncating the many-fermion operator basis that is used to approximate transformed Hamiltonians. Operator bases of increasing size and computational complexity can be arranged in a hierarchy that enables a systematic reduction of truncation errors. The suitability of this formalism for the study of strongly correlated electrons is assessed by studying the Hubbard model on finite clusters. Results are presented as a function of operator basis size, cluster size, interaction strength, and doping.

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Jonathan Moussa  
University of Texas at Austin

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