

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Optimized basis transformations for the symmetrization of a few ultra-cold atoms in a harmonic trap JARRETT REVELS, N.L. HARSHMAN, American University — Motivated by applications to ultra-cold atomic systems, we present a memoized algorithm for calculating basis transformation coefficients in the case of N -particles in a D -dimensional harmonic trap. Such coefficients are useful in the construction of symmetrized bases. These bases exploit invariance to allow for the efficient calculation of energy and entanglement spectra. Our algorithm utilizes creation and annihilation operators to algebraically construct transformation coefficients of higher excitation subspaces from lower excitation subspaces. As an example, we use these coefficients to compare the entanglement of a fermionic system with a bosonic system that has been fermionized due to strongly repulsive interactions.

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Date submitted: 22 Nov 2013

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