

Current Status of Very-Large-Basis Hamiltonian Diagonalizations for Nuclear Physics

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Today there are a plethora of many-body techniques for calculating nuclear wave functions and matrix elements. I will review the status of that reliable workhorse, the interacting shell model, a.k.a. configuration-interaction methods, a.k.a. Hamiltonian diagonalization, and survey its advantages and disadvantages. With modern supercomputers one can tackle dimensions up to about 20 billion! I will discuss prospects for going even further, and what one hopes to learn.

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