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Scattering cluster wave functions on the lattice using the adiabatic projection method

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The adiabatic projection method is a general framework for obtaining low-energy effective Hamiltonian for clusters. Previous studies [1,2] have used the adiabatic projection method in combination with the finite-volume energy Luscher method to extract scattering phase shifts. We discuss several methods to calculate elastic phase shifts directly from asymptotic cluster wave functions obtained from the effective cluster Hamiltonian for examples in one and three dimensions. This approach is less sensitive than the finite-volume energy Luscher method to stochastic and systematic errors which appear in the application of the adiabatic projection method.

References

1. M. Pine et al., Eur. Phys. J. A. 49 , 151 (2013).
2. S. Elhatisari et al., Phys. Rev. C90 , 064001 (2014)

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