

Abstract Submitted  
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**Methods for Scattering and Reactions in Ab Initio Calculations**

JUSTIN YANG, North Carolina School of Science and Mathematics, DEAN LEE, North Carolina State University — We develop a method for calculating scattering parameters and phase shifts from the energy spectra of inelastic scattering problems. Scattering in multi-particle systems can be reduced to effective two-cluster scattering using the adiabatic projection method. Our method for phase shift analysis then extracts quantities of interest such as cross sections and amplitudes from the adiabatic Hamiltonian. As a detailed example we apply this method to an exactly solvable coupled-channel test model. Our results show that this method is particularly suited for lattice calculations, and that it holds promise for direct application in lattice effective field theory simulations.

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