

Hamiltonian effective field theory in elongated or moving finite volume

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We extend previous work concerning rest-frame partial-wave mixing in Hamiltonian effective field theory to both elongated and moving systems, where two particles are in a periodic elongated cube or have nonzero total momentum, respectively. We also consider the combination of the two systems when directions of the elongation and the moving momentum are aligned. This extension should also be applicable in any Hamiltonian formalism. As a demonstration, we analyze lattice QCD results for the spectrum of an isospin-2 $\pi\pi$ scattering system and determine the s , d , and g partial-wave scattering information. The inclusion of lattice simulation results from moving frames significantly improves the uncertainty in the scattering information.

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