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Lattice EFT test of the finite-volume formalism for two-body matrix elements

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The study of two-hadron matrix elements and form factors is critical for the success of several planned experimental searches for new physics which utilize low-energy nuclear environments. Lattice QCD calculations of, e.g., short-distance nn->pp transitions relevant for neutrinoless double beta decay experiments, rely on a recently derived finite-volume formalism for computing 2+J->2 amplitudes. In this work, I will discuss consistency checks on the formalism to confirm its validity and provide quantitative predictions for lattice QCD calculations using lattice calculations of a low-energy non-relativistic EFT. Numerical calculations of the scattering system with a tunable interaction allows us to test the application of the formalism to bound and unbound systems. I will discuss preliminary results for the electromagnetic form factors of two-nucleon systems, including the case of deuteron break up.

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