

Relativistic N particle energy shifts in finite volume

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Using a non-relativistic EFT, we derive a general relativistic expression for the energy shift in finite volume. This includes the N-particle ground state, and the first two- and three-particle excited states. In addition, we probe the N particle energy shift formula in complex ϕ^4 theory. We investigate different fit models, that include relativistic effects, exponentially suppressed corrections and perturbation-theory inspired ansätze. We discuss the challenges to reliably obtain the three-body scattering amplitude.

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