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Forward to finite volume pion-pion scattering

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We study the effect of a finite volume for pion-pion scattering over energy levels and physical observables such as the phase-shift or pion mass. The method to determine the energy levels is done using a finite set of cubic harmonics, which expands our Bether-Salpeter equation (BSE) over a set of irreducible groups of rotations from the octahedral group, giving us a forward classification of energy levels, independently of whether we are including u- and t-loops. On the other hand, the study of finite corrections of pion mass and phase-shift is already done, looking at dependence with the size of the box (L). We expect that our results will help optimize the process of determining the energy levels and phase-shifting with higher accuracy, including multiple loops.

Collaboration

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