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Few-body physics

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Few-body hadronic observables play an essential role in a wide number of processes relevant for both particle and nuclear physics. In order for Lattice QCD to offer insight into the interpretation of few-body states, a theoretical infrastructure must be developed to map Euclidean-time correlation functions to the desired Minkowski-time few-body observables. In this talk, I will first review the formal challenges associated with the studies of such systems via Lattice QCD, as first introduced by Maiani and Testa, and then review methodology to circumvent said limitations. The first main example of the latter is the formalism of Luscher to analyze elastic scattering and a second is the method of Lellouch & Luscher to analyze weak decays. I will then proceed to discus recent theoretical generalizations of these frameworks that allow for the determination of scattering amplitudes, resonances, transition and elastic form factors. Finally, I will outline outstanding problems, including those that are now beginning to be addressed.

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