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Comparison with model-independent and dependent analyses for pion charge radius

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Traditionally, there has been a method to analyze the charge radius of the hadron based on the fits of its form factor with some model assumptions. Moreover, a completely different method has been proposed, which does not depend on the models. In this presentation, we explore several improvements to this model-independent method for analyzing the pion charge radius. Furthermore, we compare the results of the pion charge radius obtained from $N_f = 2+1$ lattice QCD data at $m_\pi = 0.51$ GeV using the three different methods: the traditional model-dependent method, the original model-independent method, and our improved model-independent method. In this comparison, we take into account systematic errors estimated in each analysis.

Topical area

Structure of Hadrons and Nuclei

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