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Timelike pion form factor from lattice QCD

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We perform a lattice QCD calculation to study the behavior of the electromagnetic form factor of the pion, both in the spacelike and timelike region. At the heavier than physical pion mass of 284 MeV of this lattice, the rho meson is a narrow resonance that drives the pion-pion P-wave elastic interaction. As a preamble for future work studying the timelike form factor in the coupled channel energy region, we also extract the scattering amplitude in the inelastic region containing the isovector kaon-kaon channel. In part, this work aims to test finite volume correction techniques that are needed to calculate the electroweak response of hadronic resonances. This will yield a quantitative description of their structure and further insight into their nature.

Topical area

Hadronic and Nuclear Spectrum and Interactions

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