

Calculating the ρ radiative decay width with lattice QCD

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We present the results of our lattice QCD study of the $\pi\gamma \rightarrow \pi\pi$ process, where the ρ resonance appears as an enhancement in the transition amplitude. We use Nf=2+1 clover fermions on a lattice of L=3.6 fm and a pion mass of 320 MeV. Using a combination of forward, stochastic and sequential propagators we calculate the two-point and three-point functions required in the determination of the $\pi\gamma \rightarrow \pi\pi$ amplitude and determine the $\pi\gamma \rightarrow \pi\pi$ matrix elements in a region of invariant mass s and momentum transfer q^2 . To fit the q^2 and s dependence of the amplitude we are exploring a set of general models based on a Taylor expansion and their description of the data. By analytic continuation to the complex pole corresponding to the ρ resonance we determine the resonant form factors and calculate the radiative decay width of the ρ resonance.

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