

A dispersive treatment of $K_{\ell 4}$ decays

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Collaboration

Abstract content

$K_{\ell 4}$ decays are interesting for several reasons: they allow an accurate measurement of a combination of S-wave $\pi\pi$ scattering lengths, one form factor is connected to the chiral anomaly and the decay is the best source for the determination of some low-energy constants of ChPT. We present a dispersive approach to $K_{\ell 4}$ decays, which takes rescattering effects fully into account. The dispersion relation treats both experimentally accessible form factors simultaneously and also describes the dependence on the dilepton invariant mass. We apply isospin breaking corrections before fitting the data of NA48/2 and E865 measurements and extract the values of low-energy constants from a matching to two-loop ChPT.

Primary author(s) : STOFFER, Peter (University of Bern); COLANGELO, Gilberto (University of Bern); PASSEMAR, Emilie (Los Alamos National Laboratory)

Presenter(s) : STOFFER, Peter (University of Bern)

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