

A combined description of $D^+ \rightarrow K^-\pi^+\pi^+$ and $D_s^- \rightarrow \pi^-K^+K^+$ decays

Content

We perform a combined study of $D^+ \rightarrow K^-\pi^+\pi^+$ and $D_s^- \rightarrow \pi^-K^+K^+$ decays using the naive factorization approach. The formalism allows for a description of such decays in terms of the well-known vector- and scalar- $K\pi$ form factors as well as those appearing in semileptonic $D^+ \rightarrow K^-\pi^+\ell^+\nu$ decays. We propose a useful—yet simple—parametrization to describe the latter that incorporates unitarity and analyticity constraints. As a result, we find a satisfactory description for the P -wave part in $D^+ \rightarrow K^-\pi^+\pi^+$ decays, dominated by the $K^*(892)$ resonance, while the scalar part needs some additional adjustments. Once fixed, one can predict $D_s^- \rightarrow \pi^-K^+K^+$ decays, finding an excellent agreement with the experimental results.

Summary

Primary author(s) : Dr. SANCHEZ-PUERTAS, Pablo (IFAE & BIST)

Co-author(s) : ESCRIBANO, Rafel (Universitat Autònoma de Barcelona (UAB) and Institut de Física d'Altes Energies (IFAE)); MASJUAN, Pere (UAB-IFAE)

Presenter(s) : Dr. SANCHEZ-PUERTAS, Pablo (IFAE & BIST)