Dalitz plot analyses

Section Editors

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Dalitz analyses

* Charmless B decays
  - B+ -> K+Pi-Pi+
  - B+ -> Pi+Pi+Pi-
  - B+ -> K+K+K-
  - B0 -> Pi+Pi-Pi0 (alpha)
  - B0 -> KsK+K-
  - B0 -> K+Pi-Pi0
  - B0 -> KsPi+Pi-

* B decays with charm
  - B+ -> D-Pi+Pi+
  - B0 -> D-K0Pi+
  - B0 -> D0Pi+Pi-
  - B- -> Lambda_c+ pbar pi-
  - B0 -> K-Pi+Chi_c1
  - B -> Kpi+Psi'
  - B+ -> D0 D0bar K+

* Charm decays
  - D0 -> KsK+K- (in B->DK gamma, D mixing)
  - D0 -> KsPi+Pi- (in B->DK gamma, D mixing, B->Dh cos2beta)
  - D0 -> Pi0Pi+Pi- (in B->DK gamma)
  - D0 -> K+K-Pi0
  - Ds -> PiPiPi0

Section subdivision

* Introduction

  - Phase space, variables

  - Illustrations:
    = Resonances in various channels
    = Different spins
    = Interference, different relative phase

  - Applications
    = Searches for new states
    = Measuring resonance properties
    = CP violation
    = B and D mixing
    = Resolving ambiguities

Section subdivision

* Amplitude description

  - Dynamical description
    = Breit-Wigner
      - Formfactors, running width
    = Gounaris-Sakurai
    = Flatte
    = K-matrix

  - Angular terms [Angular analysis]
    = Helisity formalism
    = Zemach tensors

  - Nonresonant parametrization
  - Non-scalar final states [-> Physics section?]

Section subdivision

* Experimental effects

  - Backgrounds
    = Parameterisation
    = Non-parametric description

  - Efficiency
    = Typical behavior
    = Parameterisation
    = Non-parametric treatment

  - Crossfeed
  - Momentum resolution
  - Kinematic fitting

Section subdivision

* Technical details

- Phase space, choice of Dalitz plot variables:
  = square Dalitz plot
  = identical particles in the final state

- Binned fits [ML fits]
  = Adaptive binning
  = Chi2 test

- Unbinned fits [ML fits]

- Normalisation
  = MC integration
  = Complex expansion of the amplitude
    (other approaches for fast normalisation?)

- Choice of free parameters (polar vs. Cartesian)
- Time-dependent analyses [Charm, B]
- Fit fractions, interference fractions

Section subdivision

* Dealing with model uncertainty

    - When to stop adding resonances?
    - Binned Dalitz analyses
    - Model-independent PWA [Babar Ds->3Pi]

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