

Charm Spectroscopy and Decays.

Antimo Palano

INFN and University of Bari

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Charm Spectroscopy and Decays.

□ Summary:

- a) **Methods for studying charm physics at B-factories.**
 - a1) B decays;
 - a2) Continuum.
- b) **Spectroscopy.**
 - b1) Theoretical and experimental overview before the B-factories.
 - b2) Non-strange spectroscopy.
 - b3) Strange spectroscopy.
- c) **Charm Decays.**
 - c1) Theoretical and experimental overview before the B-factories.
 - c2) Two-body hadronic decays. Rare decays.
 - c3a) Dalitz Analysis.
 - c3b) Three-body decays.
 - c4) Multibody decays.
 - c5) Semileptonic and radiative decays.

Methods for studying charm physics at B-factories.

Work	Statistics
Measurement of D_s^+ and D_s^{*+} Production in B Meson Decays and from Continuum e^+e^- Annihilation at $\sqrt{s}=10.6$ GeV.	22 fb ⁻¹

Non-strange spectroscopy.

Work	Statistics
Dalitz Plot Analysis of $B^- \rightarrow D^+ \pi^- \pi^-$	383 M
Non-strange charm spectroscopy from continuum	in progress 470 fb ⁻¹

Strange spectroscopy.

Work	Statistics
Observation of a Narrow Meson Decaying to $D_s^+ \pi^0$ at a Mass of $2.32 \text{ GeV}/c^2$	91 fb^{-1}
Observation of a Narrow Meson Decaying to $D_s \pi^0 \gamma$ at a Mass of $2.458 \text{ GeV}/c^2$	91 fb^{-1}
A Study of the $D_{sJ}(2317)$ and $D_{sJ}(2460)$ Mesons in Inclusive $c\bar{c}$ Production Near $\sqrt{(s)} = 10.6 \text{ GeV}$.	232 fb^{-1}
Observation of a New D_s Meson Decaying to DK at a Mass of $2.86 \text{ GeV}/c^2$.	240 fb^{-1}
Study of D_{sJ} decays to $D^* K$ in inclusive $e^+ e^-$ interactions.	470 fb^{-1}
Study of $B \rightarrow D^{(*)} D_{s(J)}^{(*)}$ Decays and Measurement of D_s^- and $D_{sJ}(2460)^-$ Branching Fractions	215 fb^{-1}

Two-body decays. Rare decays.

□ Several items related to other sections:

Work	Statistics
Measurement of the $D^+ \rightarrow \pi^+ \pi^0$ and $D^+ \rightarrow K^+ \pi^0$ Branching Fractions.	124 fb ⁻¹
Measurement of the Branching Ratios $\Gamma(D_s^{*+} \rightarrow D_s^+ \pi^0)/\Gamma(D_s^{*+} \rightarrow D_s^+ \gamma)$ and $\Gamma(D^{0+-} \rightarrow D^0 \pi^0)/\Gamma(D^{0*-} \rightarrow D^0 \gamma)$.	90 fb ⁻¹
Measurement of the Absolute Branching Fraction of $D^0 \rightarrow K^- \pi^+$.	230 fb ⁻¹
Search for $D^0 \bar{D}^0$ Mixing and a Measurement of the Doubly Cabibbo-suppressed Decay Rate in $D^0 \rightarrow K \pi$ Decays.	57 fb ⁻¹
Search for flavor-changing neutral current and lepton-flavor violating decays of $D^0 \rightarrow l^+ l^-$.	122 fb ⁻¹

Dalitz Analysis.

Work	
In collaboration with the B-reco, Charmless B-decays, Mixing and CP violation groups.	

Three body decays.

□ Several items related to other sections:

Work	Statistics
Dalitz Plot Analysis of $D_s^+ \rightarrow \pi^+ \pi^- \pi^+$.	384 fb ⁻¹
Improved measurement of the CKM angle gamma in $B^\mp \rightarrow D^{(*)} K^{(*)\mp}$ decays with a Dalitz plot analysis of D decays to $K_S^0 \pi^+ \pi^-$ and $K_S^0 K^+ K^-$.	383 M
Amplitude Analysis of the decay $D^0 \rightarrow K^- K^+ \pi^0$.	385 fb ⁻¹
Measurement of CP Violation Parameters with a Dalitz Plot Analysis of $B^\pm \rightarrow D_{\pi^+ \pi^- \pi^0} K^\pm$.	324 M
Precise Branching Ratio Measurements of the Decays $D^0 \rightarrow \pi^- \pi^+ \pi^0$ and $D^0 \rightarrow K^- K^+ \pi^0$.	232
Dalitz Plot Analysis of $D^0 \rightarrow \bar{K}^0 K^+ K^-$.	92 fb ⁻¹
Search for $D^0 \bar{D}^0$ Mixing and Branching-Ratio Measurement in the Decay $D^0 \rightarrow K^+ \pi^- \pi^0$.	230
Measurement of the $B^0 \rightarrow D^{*-} D_s^{*+}$ and $D_s^+ \rightarrow \phi \pi^+$ Branching Fractions.	123 M
A search for CP violation and a measurement of the relative branching fraction in $D^+ \rightarrow KK\pi$ decays.	80 fb ⁻¹

Multibody decays.

Work	Statistics
To come out.	

Radiative and leptonic decays.

Work	Statistics
Measurement of the Branching Fractions of the Radiative Charm Decays $D^0 \rightarrow \bar{K}^{*0}\gamma$ and $D^0 \rightarrow \phi\gamma$.	387 fb ⁻¹
Measurement of the Hadronic Form Factor in $D^0 \rightarrow K^- e^+ \nu_e$ Decays.	75 fb ⁻¹
Study of the decay $D_s^+ \rightarrow K^+ K^- e^+ \nu$.	214 fb ⁻¹
Measurement of the Pseudoscalar Decay Constant f_{D_s} Using Charm-Tagged Events in e^+e^- Collisions at $\sqrt{s} = 10.58$ GeV	230 fb ⁻¹