

$\gamma/\phi_3$

*Section Editors*

*BaBar: Fernando Martinez-Vidal*

*Belle: Karim Trabelsi*

B-factories Legacy Book Meeting  
SLAC, Oct 30-31

# $\gamma$ section contents

- Many papers related to  $\gamma$  (variety of methods and channels)
- Overview on approaches to measure  $\gamma$
- Focus on GLW, ADS and Dalitz methods on  $B^+ \rightarrow D^{(*)}K^{(*)+}$  decays
  - GLW  $B^- \rightarrow D^0K^-$ ,  $B^- \rightarrow D^{*0}K^-$ ,  $B^- \rightarrow D^0K^{*-}$
  - ADS  $B^- \rightarrow D^0K^-$ ,  $B^- \rightarrow D^{*0}K^-$ ,  $B^- \rightarrow D^0K^{*-}$
  - Dalitz/GGSZ  $B^- \rightarrow D^0K^-$ ,  $B^- \rightarrow D^{*0}K^-$ ,  $B^- \rightarrow D^0K^{*-}$
- $B^0 \rightarrow D^0K^{*0}$  modes (ADS, Dalitz) do not bring much information at B factories
  - Will include but short
- $\sin(2\beta+\gamma)$  measurements (full and partial reco) will be included
  - Shorter than subsections for GLW+ADS+Dalitz with charged modes
- Too early yet to consider “Model Independent” Dalitz measurement
  - Belle is working on it, BaBar did not consider it (so far)
- Combination of results (from main methods)

Approximate expected # pages  
needed for whole section: ~ 25

# BaBar Papers

## Charged Modes

- GLW  $B^- \rightarrow D^{(*)}K^{*-}$ 
  - PRD77, 111102 (2008) [382M], DK
  - PRD78, 092002 (2008) [382M],  $D^*K$
  - CKM2008 preliminary,  $DK^*$
  - To be published with full stat
- ADS  $B^- \rightarrow D^{(*)}K^{*-}$ 
  - PRD72, 032004 (2005) [232M],  $D^{(*)}K$
  - CKM2008 preliminary,  $DK^*$
  - To be updated with full stat
  - PRD76, 11101 (2007),  $D \rightarrow K\pi\pi^0$
- Dalitz  $B^- \rightarrow D^{(*)}K^{*-}$ 
  - PRD78, 034023 (2008) [383M]
  - To be updated with full stat
  - PRL99, 251801 (2007) [324M],  $D \rightarrow \pi\pi\pi^0$

## Neutral modes

- ADS  $B^0 \rightarrow DK^*0$ 
  - arXiv:0904.2112 [465M]
- Dalitz  $B^0 \rightarrow DK^*0$ 
  - arXiv:0805.2001 [371M]

## $\text{Sin}(2\beta+\gamma)$

- $B^0 \rightarrow D^{(*)}\pi$  full reconstruction
  - PRD73, 111101 (2006) [232M]
  - To be updated with full stat
- $B^0 \rightarrow D^{(*)}\pi$  partial reconstruction
  - PRD71, 112003 (2005) [232M]
  - To be updated with full stat

## Measurement of $r$ for $D^{(*)}h$

- $B^0 \rightarrow Ds^{(*)}+h^-$ 
  - PRD78, 032005 (2008) [381M]

Final analyses expected by 2010

# Belle Papers

## Charged Modes

- GLW  $B^- \rightarrow D(^*)K(^*)^-$ 
  - PRD73, 051106 (2006) [275M]
  - To be updated with full stat
- ADS  $B^- \rightarrow D(^*)K(^*)^-$ 
  - PRD78, 071901 (2008) [657M]
  - To be completed with  $D^*K/DK^*$  and full stat
- Dalitz  $B^- \rightarrow D(^*)K(^*)^-$ 
  - PRD73, 112009 (2006) [386M]
  - arXiv:0803.3375 [657M]
  - To be published soon, probably with full stat

## Neutral modes

- ADS  $B^0 \rightarrow DK(^*)0$ 
  - PRL 90, 141802 (2003) [85M]
  - To be updated with full stat

## $\sin(2\beta+\gamma)$

- $B^0 \rightarrow D(^*)\pi$  full reconstruction
  - PRD73, 092003 (2003) [386M]
  - To be updated with full stat
- $B^0 \rightarrow D(^*)\pi$  partial reconstruction
  - arXiv:0809.3203 [657M]
  - To be published

## Measurement of $r$ for $D(^*)h$

- $B^+ \rightarrow D^+ \pi^0$ 
  - PRL 101, 041601 (2008) [657M]
- $B^0 \rightarrow D_s(^*)+h^-$ 
  - PRL 89, 231804 (2002) [85M]. To be updated with full stat
  - To be completed with  $D_s^+h^-$  (should be published soon)

Final analyses expected by ~Summer 2011

# Inter-correlation

- Physics sections that contain Dalitz analysis results:
  - Hadronic B decays to charm (for r estimation for  $B \rightarrow D_S^{(*)} h, D^* \pi^0$ )
  - D mixing and CPV (for  $D^0 \rightarrow K_S h h$  Dalitz models)
  - Global CKM fits
- Relies on the following Tools sections:
  - Dalitz plot analyses
  - Maximum likelihood fits
  - Tagging and Vertexing (for exclusive and inclusive B reconstruction)
  - Multivariate discriminants, Blind analysis

# Potential contributors

Preparing a list of candidates and contacting them.

Potential contributors (some even not contacted yet)

**BaBar:** Abi Soffer, Matteo Rama

**Belle:** Anton Poluektov, Masaya Iwabuchi, Yoshiyuki Onuki, Jim Libby