

22.2 Benchmark “new physics” models

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In this section, we present the impacts of the results from the B factories on the *specific* new physics models. We focus on the several B factory measurements which played significant roles in eliminating or constraining those new physics models.

Papers

BaBar/Belle Published

- 1) Please refer to the following sections for the experimental papers:
 - a) $\sin 2\Phi_1/\beta$, ($S_{J/\psi K_S}$, $S_{\phi K_S}$ and $S_{\eta' K_S}$) (Subsection 14.6)
 - b) $b \rightarrow s\gamma$ (Subsubsection 14.10.2)
 - c) $(g-2)_\mu$ (Subsection 18.2.3)
 - d) $B \rightarrow \tau\nu$ and $B \rightarrow D\tau\nu$ (Subsubsection 14.11.2, 14.11.3)

Section layout 1

Section 22 Global interpretation

Subsection 22.1 Global CKM fit

Subsection 22.2 Benchmark “new physics” models

Subsubsection 22.2.1 $\sin 2\Phi_1$ measurement: eliminating alternatives to the KM mechanism for CP (e.g. approximate CP models)

Subsubsection 22.2.2 $b \rightarrow sy$ and $(g-2)_\mu$: constraining the CMSSM parameter space

Subsubsection 22.2.3 $b \rightarrow sy$, $S_{\Phi_{K_S}}$ and $S_{\eta'K_S}$: constraining the mass insertion parameters for SUSY (non-MFV)

Subsubsection 22.2.4 $B \rightarrow tv$ and $B \rightarrow Dtv$: constraining the 2HDM parameter space

This is a preliminary plan...

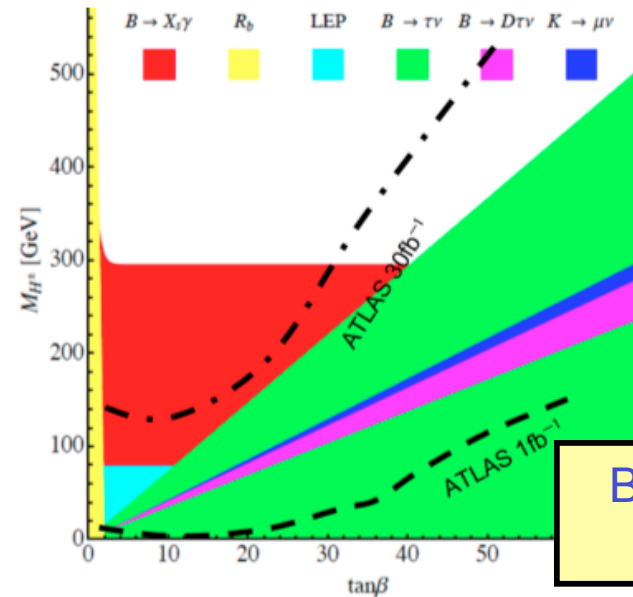
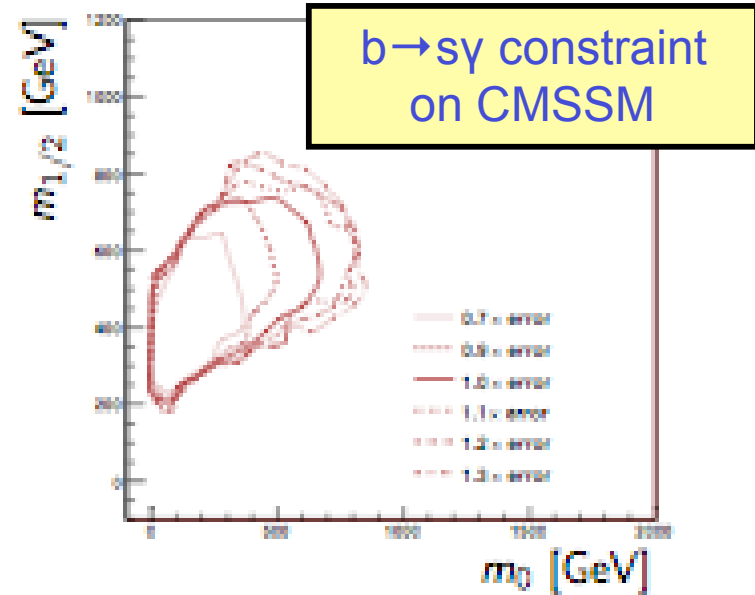
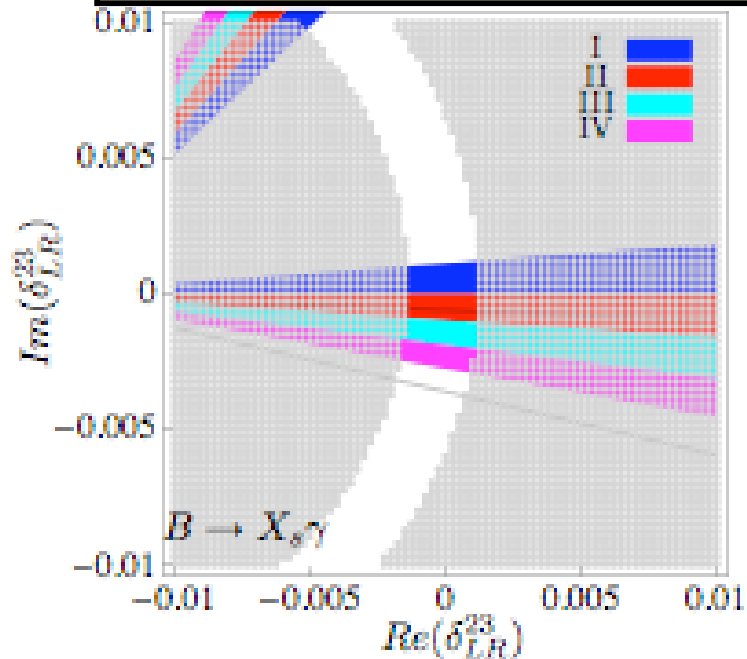
Section layout 2

Approximate expected # pages needed:
10 page maximum (2-3 page for each model)

Planned tables and figures

Here are some **examples** in mind... I will make
(or ask to provide) original figures for PBF

$b \rightarrow s\gamma$, $S_{\phi_{K_S}}$ constraint on
mass insertion
(non-MFV SUSY)



$B \rightarrow \tau\nu$, $D\tau\nu$ constraint
on 2HDM

Inter-correlation 1

Section 22 Global interpretation

Subsection 22.2 Benchmark “new physics” models

Subsubsection 22.2.2 $b \rightarrow s\gamma$ and $(g-2)_\mu$: constraining the
CMSSM parameter space

related to

Subsection 14.10 Radiative electroweak penguin decays

Subsubsection 14.10.1 Theory

Subsubsection 14.10.1.3 NP

Section 18 QED and initial state radiation studies

Subsection 18.2 Excl. hadronic cross-section

Subsubsection 18.2.3 Discussion on $(g-2)_\mu$

Foreseen resolution:

division of topics: yes if necessary

Inter-correlation 2

Section 22 Global interpretation

Subsection 22.2 Benchmark “new physics” models

Subsubsection 22.2.3 $b \rightarrow s\gamma$, $S_{\phi K_S}$ and $S_{\eta' K_S}$: constraining
the mass insertion parameters for SUSY (non-MFV)

related to

Subsection 14.10 Radiative electroweak penguin decays

Subsubsection 14.10.1 Theory

Subsubsection 14.10.1.3 NP

Foreseen resolution:

division of topics: yes if necessary

Inter-correlation 3

Section 22 Global interpretation

Subsection 22.2 Benchmark “new physics” models

Subsubsection 22.2.4 $B \rightarrow \tau \nu$ and $B \rightarrow D \tau \nu$: constraining
the 2HDM parameter space

related to

Subsection 14 Radiative electroweak penguin decays

Subsubsection 14.11 Leptonic decays, and $B \rightarrow D^{(*)} \tau \nu$

Subsubsubsection 14.11.4 Discussion, interpretation and future

Foreseen resolution:

division of topics: yes if necessary

Contributors

Started asking contributions after the PBF 3rd workshop...

Comments