




updated on 2006-February-04(Sat) - last update before the 2nd meeting

WG2: B/D/K decays

Conveners: [Franz Muheim](#), [Takeshi K. Komatsubara](#), [Gerhard Buchalla](#),
[Luca Silvestrini](#)

Welcome to the WG2 in the 2nd meeting of the FlavLHC workshop !

What's New:

- 04-Feb-2006:   Put our plan for [Theoretical Studies](#).
 - 03-Feb-2006:  The WG2 program was uploaded to [the agenda page](#).
 - 25-Jan-2006: Put our plan for [Experimental Theoretical Studies](#).
 - 23-Jan-2006: Set a link to the the agenda page for the February meeting.
 - 20-Jan-2006: Start preparing the web page for the February meeting.
-



[This is a link to the Agenda page of the the February meeting.](#)

date	09:00 -	14:00 -
Monday 06	hadronic uncertainties / WG1+2 (s-top)	recent developments / discussion (benchmarks)
Tuesday 07	hadronic uncertainties	WG1+2+3 (new physics) / WG1+2 (tools)
Wednesday 08	planning to Yellow Report	Plenary - WG summary, SLHA2 report

- The sessions on "hadronic uncertainties (Theory)" are scheduled.
 - The topics, which should cover important and mostly quite recent developments or relevant mini-reviews and be oriented to the goal of the workshop, were arranged by the conveners.

All the presentations are in 20-minutes of talk plus 10-minutes of discussion. Please save enough time for discssion !

Experimental studies:

Discussions and studies on the interplay/synergy between LHC/high-PT and Flavor are the main issues.

List of groups of benchmark decays

- B decays
 - Radiative Decays:
b- \rightarrow s γ , b- \rightarrow d γ inclusive and exclusive
 - Electroweak Penguin Decays:
b- \rightarrow sll inclusive and exclusive
 - Neutrino modes:
b - \rightarrow svv, B - \rightarrow tau v, D tau
 - Very rare decay:
Bs,d - \rightarrow mu mu, mu mu gamma, mumu pi0, (tautau)
 - UT angles (from tree diagrams):
- beta or phi1: Bd- \rightarrow psi KS, ...
- alpha or phi2: B- \rightarrow pi rho, pipi, rho rho
- gamma or phi3: Bdu - \rightarrow DK-Dalitz, D*pi Bs - \rightarrow DsK, Bd- \rightarrow pipi/Bs- \rightarrow KK
 - Bs-Bsbar mixing:
Mass difference Delta_ms, weak phase phi_s, (Bs lifetime difference)
Bs - \rightarrow Ds pi, Bs - \rightarrow J/psipi, ...
 - b- \rightarrow s hadronic transitions:
Bd- \rightarrow phiKS, eta'Ks, Bs - \rightarrow phipi, ...

- K decays
 - Rare Kaon decays:
K- \rightarrow pivv, KL- \rightarrow pi0ll

- Charm decays:
 - D0-D0bar mixing
 - Rare D decays

--> During the 2nd meeting we set up Experimental Study groups for benchmark channels.

Remit of Experimental Study groups

- Sensitivity studies:
 - for flavour variables, e.g. Delta_ms
 - toy Monte Carlos based on simulated event yields, selection efficiencies and resolutions.
 - comparisons with SM and BSM predictions, including theory results generated at the workshop

- Backgrounds:
 - improved understanding of backgrounds

- comparisons between experiments
- most important for very rare decays
- Event reconstruction:
 - mainly new studies
 - selection and trigger efficiencies, event yields and resolutions
- Realistic LHC luminosity scenarios:
 - for comparison between experiment
 - important for systematics
- MC Issues:
 - Study different tuning scenarios
 - Pythia - bbbar cross section, include Tevatron data
 - Decay model issues, PHOTOS, ...
- **Build on Existing Reports:**
 - Tevatron B physics [hep-ph/0201071](#)
 - SuperBaBar [hep-ph/0503261](#)
 - SuperBelle [hep-ex/0406071](#)

The aim is for comparisons between different experiments where input parameters are similar or differences are understood. We want to step beyond the existing Tevatron-B/SuperBelle/SuperBaBar working reports; several new approaches for interplay/synergy should be investigated.

- **Define important questions to theorists:**
 - Take the SUSY benchmarks -> models and values of SUSY parameters
 - Calculate flavour parameters for exclusive channels, e.g. BSM in Bs mixing -> Δ_{ms}
 - Try to go beyond inclusive calculations, if possible produce a generator which can be included into experimental simulations.



Theoretical studies:

In addition to the studies of benchmark decays (see above) from theoretical viewpoints, the following theory-specific studies and study groups are being considered.

- **hadronic uncertainties**
- **tools/codes for simulation**
- **Interplay/synergy between Flavor and LHC/high-Pt**
 We would develop advanced or new approaches for the interplay/synergy. For example,
 - Introduce off-diagonal terms to the current SUSY benchmarks, provide the constraints from flavor results, and see how the SUSY signatures would be changed in high-Pt experiments.
 - Pickup SUSY breaking models, put SUSY masses etc that are expected from high-Pt

- experiments, and see how the flavor results can discriminate the correct model.
- survey the SUSY or other New Physics scenarios that cannot be figured out by the high-Pt experiments, and identify the flavor (or low-energy) experiments or modes that can give us definitive answers.
 - ...
-
- **beyond SUSY (alternative New Physics models)**

List of subjects (updated on 21-Nov-2005, after to the discussions in the first meeting)

Summary of the first Workshop (Nov 7-11)

[back to the top](#)

since 2005-Oct; *Takeshi K. Komatsubara (KEK-IPNS)*