

Preface*

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In the history of quantum and particle physics, discrete symmetries and their violation have played an outstanding rôle. First, the assumption of the conservation of P (parity), C (charge conjugation), CP and CPT (T denotes time reversal) helped theorists to restrict theoretical predictions, such as in Fermi's 1934 seminal paper on weak interactions. In 1957, the observation of P (and C) violation in weak interactions gave a new impact and led to the conjecture that CP was still a conserved symmetry. In 1963, one year before the surprising observation of CP violation in $K_L \rightarrow \pi^+\pi^-$ decays, the concept of quark-flavour mixing was introduced by Cabibbo. In 1973, it was discovered by Kobayashi and Maskawa that quark-flavour mixing actually allows us to accommodate CP violation in the framework of the standard model, provided the fermion content of this theory comes at least in three different replicas. Already in 1970, Glashow, Iliopoulos and Maiani introduced the charm quark to suppress the flavour-changing neutral currents, and the mass of that quark was estimated with the help of the $K^0-\bar{K}^0$ oscillation frequency by Gaillard and Lee in 1974. Moreover, the large value of the top-quark mass was first suggested by the large $B_d^0-\bar{B}_d^0$ mixing seen by ARGUS (DESY) and UA1 (CERN). In addition to the quark sector, also experimental information on the lepton sector was crucial for our understanding of the electroweak interactions, and forbidden decays, such as $\mu \rightarrow e\gamma$ have intrigued people.

Since the early days of the standard model, flavour physics has continued to progress, and flavour-changing neutral-current processes and CP-violating phenomena are still key targets of research, as they may be sensitive to the physics lying beyond the standard model. The particles of all three generations have been discovered, and non-vanishing neutrino masses have been established, leading to a rich flavour phenomenology in the lepton sector, and pointing towards new physics. The exploration of the quark-flavour sector was dominated for more than 30 years by the kaon

system. In this past decade, the key player has been the B -meson system, and we also witnessed the appearance on stage of the top quark. Thanks to the e^+e^- B factories with their detectors BaBar (SLAC) and Belle (KEK), CP violation is now also firmly seen in B -meson decays, where the “golden” decay $B_d^0 \rightarrow J/\psi K_S$ shows CP-violating effects at the level of 70%. These effects can be translated into the angle β of the “unitarity triangle” (UT), which characterizes the Kobayashi–Maskawa mechanism of CP violation. Several strategies to determine the other angles of the triangle, α and γ , have been proposed and successfully applied to the B -factory data. After important first steps at the LEP experiments (CERN) and SLD (SLAC), in 2006 the CDF and D0 collaborations of the Tevatron (FNAL) collider could eventually measure the $B_s^0-\bar{B}_s^0$ oscillation frequency ΔM_s . In 2007, the B factories reported evidence for $D^0-\bar{D}^0$ mixing, which was the last missing meson–anti-meson mixing phenomenon.

So far, these results and intensive theoretical work have shown that the Kobayashi–Maskawa mechanism of CP violation is working remarkably well, thereby complementing the precision tests of the gauge sector of the standard model and, thus, also highly constraining any new-physics scenario beyond the standard model. On the other hand, neutrino oscillations and the baryon asymmetry of the universe require sources of flavour mixing and CP violation beyond what present in the SM. This demands the continued exploration of flavour phenomena, improving the current accuracy and probing new observables.

These efforts will soon be boosted with the startup of the LHC at CERN. B -decay studies will be the main theme of the LHCb experiment, while ATLAS and CMS will mostly focus on the properties of the top quark, and on the direct search of new particles, which could themselves be the mediators of new flavour and CP violating interactions. The new territory of the B -physics landscape that can be fully explored at the LHC is the B_s -meson system, which was not accessible at the e^+e^- B factories operating at the $\Upsilon(4S)$ resonance. The experimental value of ΔM_s is consistent with the standard model prediction, which suffers from lattice QCD uncertainties, and still leaves a lot of room for

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CP-violating new-physics contributions to $B_s^0 - \bar{B}_s^0$ mixing, which could be detected at the LHC with the help of the $B_s^0 \rightarrow J/\psi\phi$ decay. Another aspect of B_s physics is the fact that it will open various new ways to determine the angle γ of the UT. These methods make use, on the one hand, of pure “tree” decays (e.g. $B_s^0 \rightarrow D_s^\pm K^\mp$) and, on the other hand, of decays with penguin contributions (e.g. $B_s^0 \rightarrow K^+K^-$). Moreover, the $B_s^0 \rightarrow \phi\phi$ channel will allow us to shed more light on possible new-physics contributions to the CP asymmetries of various $b \rightarrow s$ penguin modes, which may be indicated by the current B -factory data for $B_d^0 \rightarrow \pi^0 K_S$, $B_d^0 \rightarrow \phi K_S$ and similar modes. Another key aspect of the LHC B -physics programme are studies of strongly suppressed rare decays, such as $B_s \rightarrow \mu^+\mu^-$, which could be highly enhanced through the impact of physics beyond the standard model.

These studies can be complemented through investigations of the extremely rare decays $K^+ \rightarrow \pi^+\nu\bar{\nu}$ and $K_L \rightarrow \pi^0\nu\bar{\nu}$. These are very clean from the theoretical point of view, but unfortunately hard to measure. Nevertheless, there is a proposal to take this challenge and to measure the former channel at the CERN SPS, and efforts to explore the latter – even more difficult decay – at J-PARC in Japan. Moreover, there are many other fascinating aspects of flavour physics, where the D -meson system is an interesting example. The recently observed $D^0 - \bar{D}^0$ mixing can be accommodated in the standard model, but suffers from large theoretical uncertainties, so that new physics may actually be hiding there; it could be unambiguously detected through CP-violating effects. The programme of charm physics starting at the new BES-III τ -charm factory, extending the reach of the finishing CLEO-c, will provide, among other things, crucial ingredients for the testing and validation of lattice calculations, as well as for the measurements of B decays.

Other important flavour probes are offered by top-quark physics and flavour violation in the neutrino and charged lepton sectors; regarding the latter, the MEG experiment at PSI, searching for $\mu \rightarrow e\gamma$ decays, has started its commissioning at the end of 2007, and new explorations of $\mu \rightarrow e$ conversion on nuclei are proposed at FNAL and J-PARC. Further studies in this direction using τ decays at the LHC and at a possible future super- B factory will be important. Finally, continued searches of electric dipole moments and measurements of the anomalous magnetic moment of the muon are essential parts of the future experimental programme, are being pursued in several laboratories and with a broad variety of constantly-improving techniques.

As well known, there is a very active community dedicated to the complete and precise determination of neutrinos’ masses, mixings and, possibly, CP violation. The state of the art and progress in this field are well documented in a great variety of workshop proceedings and study-group reports. For this reason, during this workshop we simply fo-

cused on the theoretical aspects of modeling neutrino mixing, and on the study of possible correlations of the values of the neutrino mixing parameters with flavour phenomena in the quark and charged-lepton sectors, as well as with the possible production of new heavy particles at the LHC.

In view of the approaching start of the LHC, there is a burning question: what is the synergy between the plenty of information following from analyses of the flavour sector with the high- Q programme of the ATLAS and CMS experiments? This topic was the centre of the five meetings of an extended workshop, which was held at CERN between November 2005 and March 2007. The goals of the workshop have been to outline and document a programme for flavour physics for the next decade, to discuss new experimental proposals, and to address the complementarity and synergy between the LHC and the flavour factories with respect to the discovery and exploration potential for new physics.

The activities have been coordinated by three working groups: (i) flavour aspects of high- Q collider physics, (ii) B , D and K decays, and (iii) flavour physics of leptons and of dipole moments. In addition to overviewing the status of theoretical progress and experimental results, several new studies have been performed. Seminal discussions took place on two proposals for an e^+e^- super- B factory, namely at KEK in Japan and near Frascati in Italy. Such a flavour factory would allow for precision experiments in quark and lepton flavour physics by accessing the B , the τ , and the charm sector. This discussion was complemented in the final meeting with the review of LHCb’s upgrade plans. A miniworkshop on the prospects for future studies of dipole moments was also organized, bringing together expertise from both the experimental, the accelerator and the theoretical communities.

The following three articles document the outcome of the activity of the working groups. They confirm that flavour physics is an essential element in the future of high-energy physics. Further testing of the flavour sector of the standard model leaves still room for the detection of possible, unambiguous inconsistencies. Should new-physics particles be produced at the LHC, studies of flavour physics will play a key rôle, helping us to find the underlying new-physics scenario, to study the properties of the new-physics particles, and to detect or exclude new sources of CP violation and flavour structures.

Appendix: List of Workshop presentations

We collect here the full list of presentations that have been given during the Workshop, both in the plenary and in the parallel sessions. The slides of the presentations can be obtained from the links to the meeting agendas given on the Workshop web page, <http://cern.ch/flavlhcc>.

Contributions to the 1st meeting, 7–10 November 2005

Plenary Sessions

Y. Nir	Exploring BSM phenomena with B physics
M. Hazumi	Future prospects for B factories
O. Schneider	B physics prospects at the LHC
I. Bigi	Probing BSM phenomena with charm physics
G. Isidori	Exploring BSM phenomena with K physics
L. Littenberg	Future prospects for K -decay experiments
A. Romanino	Flavour phenomena in the lepton sector
T. Mori	LFV, status and prospects
Y. Semertzidis	Prospects for future measurements of muon $g - 2$ and EDMs of muon, deuteron and neutron
R. Oldeman	Flavour studies and BSM searches at the Tevatron
G. Polesello	Flavour studies and BSM searches at the LHC
M. Nojiri	Flavour studies and SUSY at the LHC
G. Perez	Flavour physics beyond SUSY
D. Hitlin	The relevance of heavy flavour physics in the LHC era

Working Group 1

T. Lari	SUSY (s)quark flavour studies with ATLAS
I. Borjanovic	SUSY (s)lepton flavour studies with ATLAS
S. Heinemeyer	Testing the NMHV MSSM with precision observables
J. Guasch	Heavy quark production by SUSY FCNC at the LHC
G. Unel	Search for isosinglet quarks with the ATLAS detector
G. Burdman	Extra dimensions flavour physics
C. Verzegnassi	Search for Supersymmetric electroweak effects in top production at the LHC
N. Castro	Study of top anomalous couplings and FCNC with the ATLAS detector
L. Benucci	Preliminary studies of top FCNC in CMS
P. Ko	$B_s \rightarrow \mu\mu$ and various SUSY scenarios

Working Group 2

L. Cavoto	Measurements of γ and V_{ub}
T. Gershon	Unitarity triangle angles from Belle
M. Pierini	Rare charmless decays and measurements of α and β in penguins
E. Barberio	Photos
L. Fernandez	B_s^0 mass difference Δm_s and mixing phase ϕ_s at LHCb
S. Stone	Charm physics, experimental aspects
A. Soni	Null tests of the SM
P. Colangelo	Topics on nonleptonic B_s decays
S. Khalil	Probing the flavour structure in supersymmetric theories
M. Papucci	Next to minimal flavour violation
T. Iijima	Prospects for measurements of $b \rightarrow s\gamma$, $b \rightarrow s\ell\ell$, and $b \rightarrow c\tau\nu/\tau\nu$ at the super- B factory
S. Playfer	BaBar results on radiative and leptonic B decays

C. Ay	B -physics at D0
N. Nikitine	Rare dimuon decays at ATLAS
T. Speer	Sensitivity to new physics in B decays at CMS
P. Koppenburg	$B \rightarrow \mu\mu K^*$ and $B \rightarrow \ell\ell K$ at LHCb
J. Foster	Probing the flavour structure of SUSY breaking with rare B -processes: a beyond leading order analysis
Z. Ligeti	Who needs SCET in $B \rightarrow X\ell^+\ell^-$?
A. Buras	$K \rightarrow \pi\nu\bar{\nu}$, MFV and beyond It
I. Scimemi	$K \rightarrow 3\pi$, unveiling ϵ'/ϵ and $\pi-\pi$ scattering lengths
G. Ruggiero	Future kaon program at CERN
T. Komatsubara	Future kaon program at J-PARC
A. Robert	A model-independent analysis of new physics contributions in $\Delta F = 2$ transitions
A. Stocchi	Constraining new physics with the UT fit

Working Group 3

P. Iaydjiev	The neutron EDM and CryoEDM experiments at ILL
K. Kirch	Towards a neutron EDM experiment at the PSI ultra-cold neutron source
Y. Semertzidis	The deuteron EDM at the 10^{-29} e cm level with the storage ring method
P. Paradisi	Higgs mediated LFV
B. Bajc	Seesaw in SO(10) and split SUSY
A. Ilakovac	LFV in MSSM based on the minimal SO(10) model
M. Picariello	Global analysis of neutrino data and implications for future experiments
G. Branco	Leptogenesis and low energy observables
A. Baldini	Improving the $\mu \rightarrow e\gamma$ sensitivity, MEG and beyond
J. Hosek	Dynamical generation of fermion masses by large Yukawa couplings
Y. Kuno	A high-intensity, high-luminosity muon source PRISM and search for muon to electron conversion
M. Felcini	A test of CP symmetry in positronium
G. Onderwater	Measurements of muon dipole moments
G. Colangelo	Hadronic contributions to muon $g - 2$
A. Soni	Massive neutrinos in a grounds-up approach

Joint sessions, Working Groups 1 + 3

G. Isidori	Minimal lepton flavour violation
R. Rueckl	Slepton flavour violation
A. Deandrea	Tests of R-parity violation
A. Ibarra	LFV in scenarios with stau NLSP
W. Porod	Lepton flavour and number violation at the LHC
O. Vives	Realistic models of flavour at LHC
Y. Kuno	A study on $\mu(e)-\tau$ conversion in DIS
G. Marchiori	Study of $\mu-\tau$ conversion with high-intensity muon beams
Z. Was	Aspects of CP violation in τ production and decays

Joint session, Working Groups 1 + 2 + 3

T. Hurth	Possible interplay between B -physics and collider physics
J.A. Aguilar-Saavedra	Signals of new quark singlets at large colliders and B -factories
S. Banerjee	Lepton flavour violation in τ decays: status and perspectives
I. Bigi	T-violating polarization in K and lepton decays
T. Shindou	Impact of B physics in the LHC era

Contributions to the 2nd meeting, 6–8 February 2006

Working group 1

G. Unel	Update on E_6 isosinglet quark studies
S. Bejar	Higgs FCNC decays into top quark in the 2HDM model
C. Verzegnassi	A complete 1-loop MSSM calculation of tW production
J. Guasch	Single top-quark production by direct supersymmetric FCNC at the LHC
M.M. Najafabadi	tWb anomalous couplings
B. Fuks	SUSY CKM and mixed squark production

Working group 2

J. Malcles	CKM fits in the SU(3) limit
R. Zwicky	B meson form factors from sum rules and kaon DA
S. Duerr	User's guide to lattice QCD
P. Reznicek	ATLAS $\Lambda_b \rightarrow \Lambda \mu \mu$
M. Patel	LHCb $B \rightarrow DK$ ADS method
U. Haisch	Theoretical status of $K \rightarrow \pi \nu \nu$
P. Paradisi	Higgs-mediated $K \rightarrow \pi \nu \nu$ at large $\tan \beta$
T. Feldmann	Hadronic uncertainties in two-body B decays
S. Jaeger	NLO hard spectator scattering in QCDF
M. Ciuchini	CKM bounds from $B \rightarrow K \pi \pi$
E. Baracchini	QED corrections to hadronic B decays
Z. Was	News on PHOTOS Monte Carlo: issue of systematic errors
C. Lazzeroni	LHCb $B \rightarrow DK$ Dalitz method
All	Discussion on hadronic uncertainties

Working group 2, round table

G. Ruggiero	Kaons
F. Muheim	Status of study groups
M. Hazumi	Super B -factories/Belle

Working group 3

A. Pilaftsis	Flavour in resonant leptogenesis, LFV and EDMs
O. Lebedev	Neutron–electron EDM correlations in SUSY
I. Masina	On power and complementarity of the experimental constraints on seesaw models
S. Albino	Strength and correlations of slepton flavour violation in SUSY seesaw models

S. King	Lepton flavour violation in non-minimal supergravity
E. Paoloni	Search for T-violation in τ decays at super- τ/B factories
A. Lusiani	Feasibility study for a fixed target $\mu \rightarrow \tau$ conversion experiment
M. Giffels	Status and plans of $\tau \rightarrow 3\mu$ at CMS
Y. Takanishi	The see-saw mechanism, neutrino Yukawa couplings, LFV decays and leptogenesis
S. Petcov	Charged LFV decays, Majorana CP-violating phases, leptogenesis and $\beta\beta 0\nu$ -decay
F. Deppisch	Enhanced lepton flavor violation in the inverse seesaw model
A. Ibarra	Reconstructing see-saw models from low energy data
A. Strumia	Minimal dark matter
P. Paradisi	Higgs-mediated LFV effects including all the family transitions
M. Herrero	Lepton flavour violating τ and μ decays induced by SUSY
B. Bajc	The minimal SO(10) GUT
M. Krawczyk	Large 2HDM(II) one-loop corrections in leptonic τ decays

Joint sessions, Working group 1 + 2

A. Raklev	Search for a light stop
T. Lari	Search for light stop with ATLAS
S. Paktinat	Search for stop in CMS
G. Polesello	SUSY parameter measurement and b -physics
P. Gambino	NLO QCD corrections to $b \rightarrow s\gamma$ in the MSSM
All	Discussion for Tools

Joint sessions, Working group 1 + 2 + 3

G. Moreau	Neutrino flavours and LHC phenomenology within the Randall–Sundrum model
G. Hou	Flavour physics and the 4th generation
M. Schmaltz	Little Higgs

Contributions to the 3rd meeting, 15–17 May 2006

Working group 1

N. Castro	Status report on the top FCNC studies at the LHC
E. Kou	New physics effects to V_{tb} measurements in single top production at LHC
J. D'Hondt	Topological search for new flavour based physics in top quark events at the LHC
J.A. Aguilar-Saavedra	Looking for Wtb anomalous couplings in top pair decays
J. Carvalho	Studies of top quark decay asymmetries
S. Penaranda	$H \rightarrow bs$ and $b \rightarrow s\gamma$ in the MSSM with NMFF: FeynArts/FormCalc updated
S. Pukhov	Calchep for BSM physics
J.A. Aguilar-Saavedra	Discovering the Higgs boson in heavy singlet decays
S. Sultansoy	The fourth SM family: present status
G. Burdman	Signals for flavor violation in warped extra dimensions
P. Skands	The smoking gun of baryon number violation
B. Fuks	SUSY-CKM matrix determinations in SUSY electroweak processes at the LHC
C. Verzegnassi	t-Channel single top production at LHC: a realistic test of electroweak models

S. Paktinat	CMS potential for SUSY discovery in top + missing E_T final states
Z. Was	Discussion on the PHOTOS tool
P. Skands	Discussion on the SUSY Les Houches accord

Working group 2

U. Haisch	$B \rightarrow X_s \gamma$
I. Belyaev	LHCb radiative penguin
T. Iijima	Belle $B \rightarrow \tau \nu$
Y. Okada	$B \rightarrow (D)\tau \nu$ in MSSM
S. Robertson	BaBar $B \rightarrow s \nu \nu$ and $B \rightarrow l \nu$
G. Isidori	New physics benchmarks
A. Buras/C. Tarantino	Particle mixing and CPV in little Higgs models
G. Zhu	$B \rightarrow K^* ll$ in SCET
T. Huber	Electromagnetic logs in $b \rightarrow sll$
J. Berryhill	$b \rightarrow sll$: experimental status
C. Kao	Detecting Higgs bosons with muons in supergravity unified models
C.-J. Lin	Experimental results on $B \rightarrow \mu\mu$
A. Dedes	$B \rightarrow \mu\mu$ in SUSY
G. Borissov	D0 ΔM_s measurement
S. De Cecco	CDF ΔM_s measurement
A. Lenz	$\Delta\Gamma/\Gamma_{B_s}$, new results
D. Guadagnoli	ΔM_s and SUSY
M. Bona	UTfit and ΔM_s
S. T'Jampens	CKMfitter and ΔM_s
P. Ball	New physics in B_s mixing
All	Discussion on ΔM_s
C. Smith	SUSY in K decays
M. Beneke	$B \rightarrow VV$ decays can be useful
E. Conte	$\Lambda_b \rightarrow \Lambda V$
M. Vysotsky	α extraction from $B_d \rightarrow \pi\pi$ decays
O. Deschamps	$B \rightarrow \rho\pi, \rho\rho$ at LHCb
M. Bona	$B \rightarrow \rho\rho$ isospin analysis/summary of α determination
J. Rademacker	Γ extraction with 4-body D decays in $B \rightarrow DK$
S. Sultansoy	Turkish accelerator complex
D. Asner	Status of BES

Working group 3

H. Nishiguchi	Update on the status of MEG
W. Bertl	Final result of the SINDRUM II search for $\mu-e$ conversion
P. Paradisi	Probing new physics through lepton universality
M.-A. Sanchis-Lozano	Test of lepton universality in Υ decays: searching for a light Higgs boson
L. Fiorini	Testing LFV measuring $(K \rightarrow e\nu)/(K \rightarrow \mu\nu)$ in NA48: status and perspectives
O. Igonkina	Test of lepton universality in τ decay

A. van der Schaaf	Two new $\pi \rightarrow e\nu$ experiments
Y. Semertzidis	The muon $g - 2$ experiment
A. Rossi	Gauge and Yukawa mediated SUSY breaking in the triplet seesaw
S. Antusch	LFV and θ_{13} in SUSY seesaw
J. Hisano	Flavor mixing and EDMs in the SUSY models
P. Harris	The neutron EDM experiment at ILL
Y. Semertzidis	The deuteron EDM
H. Wilschut	Tests of time reversal violation (TRV) in atomic and nuclear physics—the TRIIMP facility nearing its completion
S. Davidson	Flavour matters in leptogenesis
L. Calibbi	LFV from SUSY-GUTs
Plenary session, Future B facilities	
T. Nakada	Flavour physics at LHC
M. Yamauchi	Flavour physics at KEK super- B
M. Giorgi	Flavour physics with a linear super- B factory
K. Oide	Design of KEK super- B factory
P. Raimondi	Design of a linear super- B

Contributions to the 4th meeting, 9–11 October 2006

EDM and g-2 miniworkshop	
Y. Semertzidis	Welcome/review of the report plans for EDM/ $g - 2$
N. Ramsey	The history of the neutron EDM
A. Ritz	Electric dipole moments as probes of new physics
P. Harris	Review of the neutron EDMs (ILL and SNS)
K. Kirch	The neutron experiment at PSI plus the muon EDM prospects
F. Farley	How to measure $g - 2$ with 15 GeV muons
G. Onderwater	The deuteron EDM experiment
G. Venanzoni	Polarimetry for the dEDM method
W. Morse	EDM of proton and ^3He
Y. Orlov	A plan of comprehensive investigation of systematic errors and spin coherence time for the deuteron resonance EDM experiment
A. Luccio	Spin and beam dynamics simulations
J.R. Guest	EDM searches on atoms with deformed nuclei: Ra-225
M. Kozlov	Theory of molecular EDM experiments
I. Masina	EDM experiments as probes of SUSY
J. Miller	Measuring the muon anomaly to 0.25 ppm
A. Hoecker	Evaluation of the hadronic vacuum polarization contribution to the muon $g - 2$
S. Redin	Hadrons at VEPP-2M
D. Leone	e^+e^- hadronic cross section measurement at DAFNE with the KLOE detector
G. Gabrielse	New measurement of the electron magnetic moment and the fine structure constant
O. Lebedev	More on EDM correlations in SUSY

Working group 1	
M. Spiropulu	CMS discovery potential for SUSY topologies
N. Krasnikov	Using the $e^\pm \mu^\mp + E_T^{\text{miss}}$ signature in the search for supersymmetry and lepton flavour violation in neutralino decays
A. Ventura	Neutralino spin measurement with ATLAS
I. Hinchliffe	Lepton flavour violation in neutralino decays
A. Gruzza	Large electroweak logarithms in heavy quark decay at LHC
C. Verzegnassi	The relevance of electroweak effects in the overall t-channel single top production at LHC
P.M. Martins Ferreira	Contributions from dimension five and six effective operators to flavour changing top physics
A. Onofre	Wtb anomalous top quark couplings
L. Benucci	FCNC top decays
F. del Aguila	Lepton number violation with muons at LHC
J.A. Aguilar-Saavedra	Signals of new fermions at high transverse momenta
M. Kirsanov	Detection of heavy Majorana neutrinos and right-handed bosons
G. Unel	E_6 and the Higgs boson
G. Servant	Multi-W events at the LHC
E. Ozcan	4th family physics
G. Unel	Determination of the $D-d$ mixing angle
B. Clerbaux	CMS discovery potential for Z'/ED and spin discrimination
Working group 2	
M. Hazumi	News on superKEKB physics reach
F. Forti	Linear super- B update
F. Muheim	LHCb upgrade
A. Soni	New physics signals using exclusive radiative B -decays
R. Zwicky	$B \rightarrow K^*\gamma$ time-dependent CP asymmetry: (quasi) null test for SM
C. Eggel	Discovery potential for $B_s \rightarrow \mu^+ \mu^-$ in CMS
F. Teubert	Search for the decay $B_s \rightarrow \mu^+ \mu^-$ at LHCb
S. Descotes-Genon	$B_{s,d} \rightarrow K K$ using QCD Factorization and flavour symmetries
G. Bell	Higher-order QCD in exclusive B decays
D. Asner	Update on charm results
P. Spradlin	Charm physics at LHCb
C. Bobeth	New physics in $b \rightarrow sll$
F. De Fazio	$B \rightarrow K^* ll$ and extra dimensions
A. Khodjamirian	Charm resonances in $b \rightarrow sll$
U. Egede	$B \rightarrow K^* ll$ at LHCb
S. Villa	$B \rightarrow K^* ll$ and $B^+ \rightarrow \tau^+ \nu$ from Belle
L. Cavoto	CKM angles from BaBar
M. Hazumi	ICPV results from Belle
A. Sarti	$B \rightarrow h^+ h^-$ at LHCb
A. Bevan	Rare hadronic $b \rightarrow s$ and $b \rightarrow d$ transitions (BaBar)
S. Burdin	$A_{SL}, \Delta \Gamma_s, \phi_s$

L. Wilke	Study of the decay $B_s \rightarrow J/\psi\phi$ with the CMS detector
A. Starodumov	Missing particle reconstruction using vertexing
N. Nikitine	Rare B -decay backgrounds studies—update
S. Heinemeyer	Tools (where we are)
S. Heinemeyer	Flavor benchmarks
M. Schmitt	CMS benchmark analysis

Working group 3

S. Lavignac	Leptogenesis and LFV in type I + II seesaw mechanism
W. Rodejohann	LFV, leptogenesis and neutrino mixing in QLC scenarios
T. Yamashita	Flavour violation in “minimal” SUSY SU(5) models
C. Biggio	Unitarity in the leptonic sector
J. Miller	Prospects for a muon to electron conversion experiment at fermilab
W. Bonivento	Search for $B \rightarrow \mu e$ with LHCb
T. Shindou	How can CP phases contribute to LFV processes?
M. Aurelio Diaz	Neutrino masses and mixing in split supersymmetry

Concluding plenary session

Y. Semertzidis	Summary of the EDM and $g - 2$ miniworkshop
M. Misiak	$B_s \rightarrow X_s \gamma$ at NNLO
N. Ramsey	Contributions of magnetic resonance to other sciences

Contributions to the 5th meeting, 26–28 March 2006

Working group 1: plenary reports

G. Burdman	Flavour and top physics, theory
N.F. Castro	Flavour and top physics, experiment
T. Lari	Sleptons
M. Klasen	Squarks
G. Unel	Exotics, I
J.A. Aguilar-Saavedra	Exotics, II

Working group 2: plenary reports

D. Asner	Charm physics
G. Buchalla	Weak decays and QCD
J. Berryhill	Rare B decays
M. Ciuchini	$B \rightarrow s, d$ transitions, mixing, and UT angles
G. Isidori	New physics scenarios: flavour benchmarks
S. Heinemeyer	New physics scenarios: tools

Working group 3: plenary reports

M. Raidal	The theory sections of the WG3 chapter of the report
S. Davidson	Low energy observables and phenomenological parametrization of LFV
A. Rossi	LFV in neutrino seesaw scenarios
F. Deppisch	LFV at colliders

A. van der Schaaf	LFV experiments and lepton universality
Y. Semertzidis	EDM and $g - 2$ experiments
I. Bigi	The next big challenge: CP violation with charged leptons

Plenary sessions

Y. Grossman	Flavour in BSM
F. Couderc	Status and prospects for the detection of new physics at the Tevatron
T. Berry	Prospects for the observation of new physics at the LHC
U. Martyn	Prospects for flavour studies at the ILC
S. King	BSM and flavour in the lepton sector
R. Timmermans	EDMs, status and prospects
C. Gonzalez-Garcia	Probing flavour with neutrinos
A. Buras	FCNC processes in the LHC era
T. Komatsubara	Status and prospects of Kaon experiments
M. Roney	Experimental prospects for rare τ decays
J. Piedra	Tevatron heavy flavour programme: status and prospects
M. Hazumi	B factories: status and prospects
T. Nakada	The LHC heavy flavour programme
A. Stocchi	The physics potential of an e^+e^- super- B factory
K. Oide	Status of the KEK super- B project
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S. Stone	The physics potential of the LHCb high-lum upgrade