

Table of Contents

Working Group on the Interplay between Collider and Flavour Physics:.....	1
Tools and Benchmarks.....	1
Interface.....	1
Flavour Les Houches Accord.....	1
Tools.....	2
Benchmarks	

Tools and Benchmarks

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Interface

Flavour Les Houches Accord NEW

The objective of this accord is a clear and well-defined structure for interfacing computational tools of "New Physics" models with low-energy flavour calculations. More information...[↗](#)

Tools

We do not attempt to provide yet another database with tools. We simply put a list of existing tools. Most of them are available here [↗](#).

Note: only flavor observable related tools are listed here.

Name	Author(s)	Description	Availability
CKMFitter	Charles, <i>et al.</i>	CKM fits (Frequentist), (mostly) in SM	yes (webpage ↗)
CPSuperH	Lee, Pilaftsis, <i>et al.</i>	Higgs phenomenology and B physics observables in the MFV complex MSSM	yes (webpage ↗ , manual)
FeynArts/FormCalc	Hahn	(Arbitrary) one-loop corrections in the NMFV MSSM	yes (webpage ↗ , manual)
FeynHiggs	Hahn, Heinemeyer, Hollik, Rzehak, Weiglein	Higgs/EWPO phenomenology and some B physics observables in the (N)MFV (complex) MSSM	yes (webpage ↗ , manual)
FCHDECAY	Bejar, Guasch	FCNC Higgs decays in the NMFV MSSM	yes (webpage ↗)
MicrOMEGAs	Belanger, Boudjema, Pukhov, Semenov	CDM density, some B physics observables in the MFV MSSM	yes (webpage ↗ , manual)
SLHALib2	Hahn	Read/write SLHA data (NMFV/RPV/CPV MSSM, NMSSM)	yes (webpage ↗ , manual)
SoftSusy	Allanach	Evaluates NMFV MSSM parameters from GUT input	yes (webpage ↗ , manual)
Spheno	Porod	evaluates NMFV MSSM parameters from GUT input	yes (webpage ↗ , manual)
Spice	Engelhard, Feng, Galon, Sanford, Yu	evaluates spectrum, decay widths and BRs (including LFV BRs) for LFV models.	yes(webpage ↗)
SuperBayeS	Ruiz, Trotta, Feroz	SUSY fits and flavor predictions	yes (webpage ↗)
SuperIso	Mahmoudi	Isospin asymmetries and other flavor observables in the MFV MSSM	yes (webpage ↗)
SusyBSG	Degrassi, Gambino, Slavich	NLO calculation of BR[B Xs] in the MSSM with Minimal Flavor Violation	yes (webpage ↗)
UTfit	Bona, <i>et al.</i>	Unitarity Triangle fits (Bayesian) in SM and beyond	planned (webpage ↗)
SuFla	Isidori, Paradisi	Low energy flavor (B and K) observables in the MFV MSSM	partially
XSusy			partially

	Bozzi, Fuks, Herrmann, Klasen	Masses, production cross sections, BRs in the NMFV MSSM	
<i>no name</i>	Silvestrini	KK mixing, BB mixing, $b \rightarrow s$, $b \rightarrow sll$	planned
<i>no name</i>	Bobeth, Ewert, Haisch	Rare B and K decays in/beyond the SM	planned
<i>no name</i>	Chankowski, Jäger, Rosiek	FCNC observables in the MSSM	planned
<i>no name</i>	Bejar, Guasch	FC Higgs/top decays in the THDM I/II	planned

If you want to add something to this list, send an email to [Sven.Heinemeyer@cernNOSPAMPLEASE.ch](mailto:Sven.Heinemeyer@cern.ch).

General questions that should be answered:

- What is still missing? Are all relevant topics covered?
- How can it be ensured that a code/calculation is useful/usable for others?
- Can experimentalists make use of them?
- What are the wishes of the experimentalists?
- Interaction between theory and experiment?

Benchmarks

Benchmarks can be used to

- study the complementarity of low- and high-energy experiments
- study the synergy of low- and high-energy experiments

Three different approaches have been discussed:

1. Take the good old SPS points (some have been studied in quite detail)
 - evaluate LHC measurements
 - investigate what B physics can add
 This approach has been used e.g. for SuperB investigations.
2. Take a GUT based model with flavor violation
 - fit to current data
 - fit to anticipated LHC data
 - investigate what B physics can add
3. Define benchmark scenarios (in GUT based models)
 - investigate compatibility with existing constraints
 - investigate what B physics can add (in the future)
 This approach has partially been realized in the NUHM.

If you want to add some thoughts, send an email to [Sven.Heinemeyer@cernNOSPAMPLEASE.ch](mailto:Sven.Heinemeyer@cern.ch).

-- SvenHeinemeyer - 25 Sep 2008

This topic: [Main > ToolsAndBenchmarks](#)

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