

LHC EFT WG

Flavour assumptions

Gauthier Durieux
(CERN)

with

Ilaria Brivio, Nuño Castro, Admir Greljo, Andrei Gritsan, Patrick Owen,
Giovanni Petrucciani, Eleni Vryonidou (areas 1,3,6)

25 January 2022
Flavour assumptions



Goal

- consistent flavour assumptions
- for EW+Higgs+top experimental fits
not a *full flavour model* applicable to any observable
- with near-future [$\mathcal{O}(50)$ d.o.f.] and run-3 perspective

Starting-point proposal

more
restrictive

Top-philic (extending the 'universal' scenario)

- new physics couples dominantly to bosons+tops
 - e.g. realized in composite Higgs scenarios
- $\mathcal{O}(30)$ CP-even + $\mathcal{O}(10)$ CP-odd d.o.f.
- not radiatively stable

baseline

$SU(2)_{u,q}^2 \times SU(3)_{d,l,e}^3$


- basically MFV with all breakings neglected apart from y_t
- $\mathcal{O}(100)$ d.o.f. [$\mathcal{O}(180)$ for $SU(2)_{q,u,d}^3 \times SU(3)_{l,e}^2$]
- reasonable approx. for $\dim \leq 4$ too
 - radiatively stable then
 - massless b (5F scheme), no $h \rightarrow b\bar{b}$ or $\mu^+\mu^-$

less
restrictive

LFU-violating

- separating e, μ, τ (e.g. $U(1)_e^3 \times U(1)_l^3$, $[U(1)_{l+e}]^3$, $U(2)^5$, etc.)
- not needed, a priori, given the limited interplay with B anomalies (only in high-mass Drell-Yan)
- $\mathcal{O}(15)$ Warsaw operators with leptons

Comments and discussion

14:10	→ 16:26	Contributed comments	
14:10		Contributed comments Speaker: Gino Isidori (University of Zurich (CH))	🕒 10m
14:25		Contributed comments Speakers: Danny van Dyk, Sebastian Bruggisser (University Heidelberg), Susanne Westhoff (Heidelberg University)	🕒 10m
14:40		Contributed comments Speakers: Luca Silvestrini, Mauro Valli	🕒 10m
14:55		Contributed comments Speaker: Darius Faroughy (University of Zurich)	🕒 10m
15:10		Contributed comments Speaker: Sophie Alice Renner (CERN)	🕒 10m
15:25		Coffee break	🕒 15m
15:40		Contributed comments Speaker: David Marzocca (INFN Trieste)	🕒 10m
15:55		Contributed comments Speaker: Gudrun Hiller (Technische Universitaet Dortmund (DE))	🕒 10m
16:10		Contributed comments Speakers: Christophe Grojean (DESY (Hamburg) and Humboldt University (Berlin)), Emanuele Gendy, Joshua Thomas Ruderman (NYU), Quentin Bonnefoy (DESY)	🕒 10m
16:25		Contributed comments Speaker: Jernej Fescl Kamenik (Jozef Stefan Institute (SI))	🕒 1m
		 written-comments.p...	
16:25	→ 17:00	Discussion	🕒 35m