

Status of the Semileptonic B Averages

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Minutes of the HFLAV sl. meeting May 11

1) common parameters

- MR prepared a common parameter file based on the RPP2021 averages:
/eos/project-h/hflav/www/semi/spring21/common/common.param.writeup21
- All HFLAV semileptonic spring21 averages should be based on these input parameters.

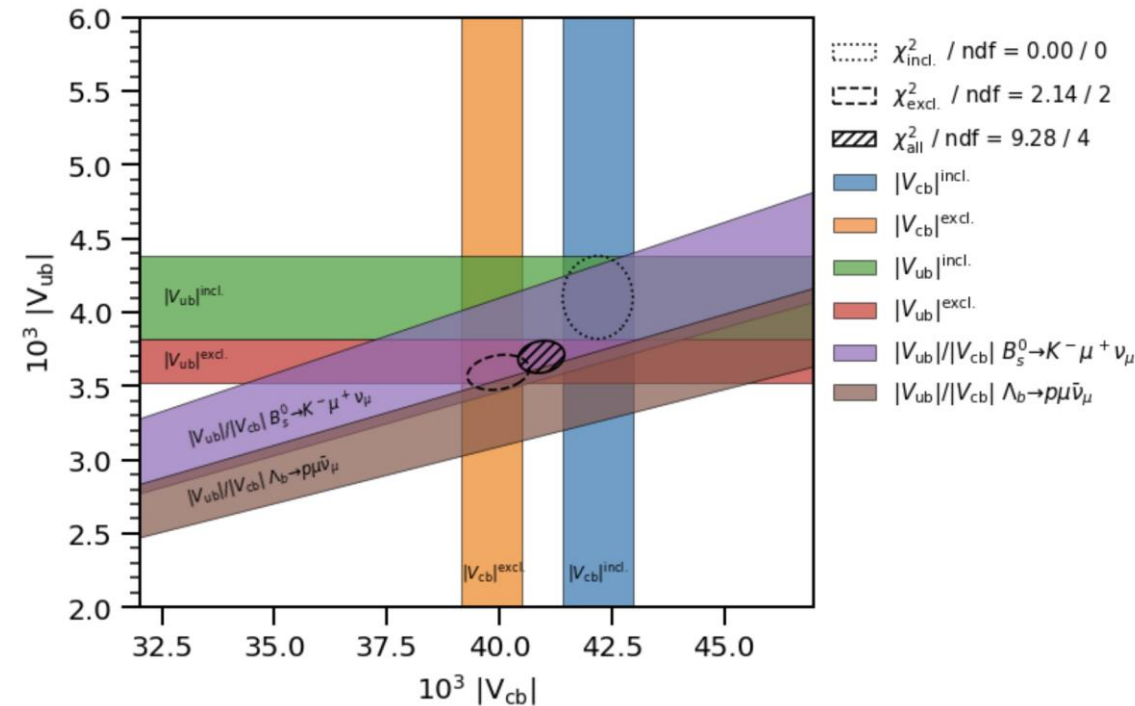
2) exclusive CKM-favoured

- The COMBOS averages (BR of $B^0 \rightarrow D^{*-} l \nu$, $B^+ \rightarrow D^{*0} l \nu$, $B^0 \rightarrow D^- l \nu$ and $B^+ \rightarrow D^0 l \nu$) and the CLN fits for $B \rightarrow D^{*} l \nu$ and $B \rightarrow D l \nu$ have been updated (CS)
- The new Belle II measurements (arXiv:2008.07198, arXiv:2008.10299) are now being added to the average of $B^0 \rightarrow D^{*-} l \nu$ (CS, work in progress)
- BGL fit for $B \rightarrow D^{*} l \nu$ combining input from Belle (PRD 100, 052007) and BaBar (PRL123 (2019) 9, 09180) is being prepared (CS, work in progress)

Minutes (cont.)

3) combined extraction of $|V_{cb}|/|V_{ub}|$

- This is worked on in parallel by FB and MR. Today we agreed on the inputs to be used:
 - CLN fit result $B \rightarrow D^*/D$ as default (as a cross-check we will also prepare a fit with BGL)
 - There were updates from LHCb for $L_b \rightarrow p \mu \nu$, $B_s \rightarrow K \mu \nu$ and $B_s \rightarrow D_s(^*) \mu \nu$ -- MR shared these with FB
 - $|V_{ub}|$ inclusive using the new Belle result (arXiv:2102.00020)
- This will be our main result for $|V_{cb}|$ and $|V_{ub}|$. We will present a single average for each exclusive and inclusive but not attempt to combine inclusive and exclusive



Minutes (cont.)

4) inclusive CKM-favoured

- FB is confirming with Belle II if the new hadronic moments from Belle II (arXiv:2009.04493) can be shared with HFLAV. The full error matrix is available but not included in the publication. So, agreement from the physics coordinator is needed

5) exclusive CKM-suppressed

- $B \rightarrow \rho/\omega \ell \nu$ fit is being ported to jupyter (FB)
- New combination of $B \rightarrow \rho/\omega \ell \nu$ and determination of the form factor (FB)
- New $B \rightarrow \eta/\eta' \ell \nu$ from Belle (arXiv:2104.13354) -- was a bit post-Moriond but should be included

Minutes (cont.)

6) inclusive CKM-suppressed

- The new Belle measurement of $|V_{ub}|$ inclusive was resubmitted to PRD (arXiv:2102.00020). FB will provide the details of this measurement to Concezio Bozzi, so that he can update $|V_{ub}|$ inclusive

7) $B \rightarrow D^{(*)} \tau \nu$

- New measurements of $R(D^{*})$ were expected from CMS and LHCb for winter 2021 but were deferred to the summer. **We request an extension of the cutoff date for $R(D^{*})$ - $R(D)$ to after EPS-HEP 2021 so that we can include those measurements**