



`flavio` : Report on projects

Goals

- Installing `flavio` for *using* and *development*
- Learning how to use Git and GitHub
- Implement something new:
 - Experimental data
 - Theory prediction for an observable
 - Features and functionalities

Participants and topics

- 21 participants registered
- 12 topics proposed
- 17 participants signed up for topics

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5 topics with active development in small groups:

- $\Lambda_b \rightarrow \Lambda(1520)\ell\ell$ angular observables
- $B_c \rightarrow J/\Psi$ form factors and observables
- Importing and plotting 2D experimental likelihoods (for future R_K & R_{K^*} combination)
- Updating measurement database
- Function returning list of theory references

Organization

- Lecture on `flavio` with introduction to basics
- Interactive slides for trying out examples
- Possibility to **propose topic** in indico registration
- Doodle for **topic selection**
- Initial communication via email
- Forming **small groups based on topics** and switching communication to **Mattermost channels**
- GitHub for collaborative code development

Results and work in progress

$\Lambda_b \rightarrow \Lambda(1520)\ell\ell$ angular observables

- Open pull request on GitHub
- 10 commits with >400 lines of code added
- Mostly done: Implementing helicity and transversity amplitudes and observables
- Work in progress: Implementing form factors and tests

$B_c \rightarrow J/\Psi$ form factors and observables

- Development on GitHub
- 10 commits with >140 lines of code added
- Mostly done: Implementing form factors
- Work in progress: Implementing observables

Importing and plotting 2D experimental likelihoods

(for future R_K & R_{K^*} combination)

- Many interesting discussions and development in Mattermost channel
- Mostly done: Function for importing 1D, 2D, and 3D ROOT histograms with experimental likelihoods
- Work in progress: Functions for simplified plotting of (correlated) experimental data

Updating measurement database

- 2 open pull requests on GitHub
- Measurements added:
 - LHCb $BR(B^+ \rightarrow K^+ \mu^- \tau^+)$
 - LHCb $B^0 \rightarrow K^{0*} e^+ e^-$ angular observables
 - ATLAS $W \rightarrow \tau \nu$
 - ATLAS $Z \rightarrow \tau \ell$
 - Several LEP measurements

Function returning list of theory references

- Discussion on GitHub
- Open pull request on GitHub
- 3 commits with ~100 lines of code added
- Mostly done: Basic Citations class added
- Work in progress: more methods and functions, adding references to code

Other results

- Issues found in installation routines of `rundec` and `wilson` packages on (Chinese) Windows
- Both issues already fixed!

Comments

- Communication works very well on Mattermost (useful features: showing code or plots, sending files)
- Took ~1 week for selecting topics, forming groups, installing everything, etc.
- Some participants had not much time to work on projects but have everything installed and set up

Outlook

Also after the end of the official program

- You are always welcome to **discuss projects and ask questions on Mattermost**
- *Started projects:* we will **continue development on GitHub**
- *Projects not started yet:* we can still **discuss and start other proposed projects**

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A big THANK YOU to all the participants!