



PID Hands-on Tutorial

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Setup

- We will use jupyter notebooks as a baseline
 - <https://confluence.desy.de/display/BI/Running+Jupyter+Notebook+on+KEKCC> (win)
 - <https://confluence.desy.de/display/BI/How+to+run+jupyter+notebooks+at+KEKCC>
- Please test this before the session. We will try to help debug this for a couple of minutes, but we don't have the time to set this up for everybody from scratch.

How to run

- `ssh -L 8XXX:localhost:8XXX kekcc`
 - Pick your favorite three digits for XXX (should be unique within the tutorial)
- `source /cvmfs/belle.cern.ch/tools/b2setup release-04-00-01`
- `git clone ssh://git@stash.desy.de:7999/b2pp/chargedpid.git`
- `cd chargedpid`
- `jupyter notebook --no-browser --port=8XXX`
 - Same number as above
 - This will give you a link

If this doesn't work

- There's also a python script in the directory.
- Just comment out the parts that we haven't gotten to, yet.
- It'll make plots, just use those.

Making ntuples

- The scripts in the validation/ directory can be used to reconstruct a decay from mdst / cdst files and make ntuples
 - Example:
https://stash.desy.de/projects/B2PP/repos/chargedpid/browse/reconstruction/DStar_Dpi_Kpi_MDSTtoNTUP.py
 - Look at lines 234ff
- Variable groups are defined in <https://stash.desy.de/projects/B2PP/repos/chargedpid/browse/reconstruction/aliases.py>
 - Can be used to define aliases for function calls
 - Example:
"countTOPHits_0_20ns" ← "countTOPHitsInInterval(0, 20)"

Reading the ntuples

- We will use ntuples prepared beforehand, but feel free to use your own.
- We are going to reconstruct the D^* decay, which gives us a sample of K and pi and then we will query the detector response to those tracks.
- We will use pandas dataframes and matplotlib for the analysis
- Some plots are predefined in https://stash.desy.de/users/jstrube/repos/chargedpid_studies/browse/notebooks/ChargedPID_Lecture/validationPlots.py
- The notebook for this tutorial is https://stash.desy.de/users/jstrube/repos/chargedpid_studies/browse/notebooks/ChargedPID_Lecture/chargedPID_handson.ipynb
 - You can also just download this and follow offline
- N. b. if you like notebooks and git, try <https://github.com/mwouts/jupytertext>



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Thank you