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_DpiKpi_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 π 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/jupytext
Thank you