

Method for the determination of hadronic tracking efficiencies using partially reconstructed charm decays.

People involved: Mika Vesterinen, Laurent Dufour, Jeroen van Tilburg, S. Hellesund, D. Mueller.

Note

The latest version of the note can be found at

<https://svnweb.cern.ch/cern/wsvn/lhcbdocs/Users/ldufour/Velo2Long/latest/latex/main.pdf>

Code

All code is available on GitLab in the "AsymmetryTools" subproject of semileptonics. In there there is the "Velo2Long" in "projects". <https://gitlab.cern.ch/lhcb-slb/AsymmetryTools>

In order to compile:

```
(checkout the project)
source setenv.sh
cmake .
make
make install
```

Earlier documentation

"Measuring pion and kaon tracking efficiencies and asymmetries using charm decays with one partially reconstructed track" (S. Hellesund) LHCb-INT-2014-041

"Measurement of the Kaon Detection Asymmetry using Double-tagged Partially Reconstructed D0 Decays" (D. Mueller) LHCb-INT-2013-054

Data samples

* Location: /eos/lhcb/user/l/ldufour/Velo2Long contains (2012, 2015) 4-body and (2015, 2016) 2-body samples.

Monte Carlo samples

Large MC samples to be generated a.s.a.p.

BKK paths:

Signal

- 27163003: 2012 conditions, Pythia 6 & 8, 2-body mode, DecProdCut
 - ◆ sim08a:
evt+std://MC/2012/27163003/Beam4000GeV-2012-MagDown-Nu2.5-Pythia8/Sim08a/Digi13/Trig0x
3.5M events
 - ◆ sim08e:
evt+std://MC/2012/27163003/Beam4000GeV-2012-MagDown-Nu2.5-Pythia8/Sim08e/Digi13/Trig0x
140k events
 - ◆ sim08h:
evt+std://MC/2012/27163003/Beam4000GeV-2012-MagDown-Nu2.5-Pythia8/Sim08h/Digi13/Trig0x
1M events

- ◆ sim09a:
 - evt+std://MC/2012/27163003/Beam4000GeV-2012-MagDown-Nu2.5-Pythia8/Sim09a/Digi13/Trig0x
 - 1M events
- 27163008: 2012 conditions, Pythia 6 & 8, 2-body mode, TightCut
 - ◆ sim08a:
 - evt+std://MC/2012/27163008/Beam4000GeV-2012-MagDown-Nu2.5-Pythia8/Sim08a/Digi13/Trig0x
 - 2M events
 - ◆ (the other one is stripping filtered)
- 27265000: 2012 conditions, Pythia 6 & 8, 4-body mode, DecProdCut (*low statistics?*)
 - ◆ sim08a:
 - evt+std://MC/2012/27265000/Beam4000GeV-2012-MagDown-Nu2.5-Pythia8/Sim08a/Digi13/Trig0x
 - 1.3M events

Background

- 27163400: 2012 conditions, Pythia 8, DecProdCut, mode: K pi pi0
 - ◆ sim08f:
 - evt+std://MC/2012/27163400/Beam4000GeV-2012-MagDown-Nu2.5-Pythia8/Sim08f/Digi13/Trig0x
 - 5M events
- 27173001: 2012 conditions, Pythia 8, DecProdCut, mode: K mu nu (semileptonic D decay)
 - ◆ sim08d:
 - evt+std://MC/2012/27173001/Beam4000GeV-2012-MagDown-Nu2.5-Pythia8/Sim08d/Digi13/Trig0x
 - 2.5M events

Overall structured flow paper

Task	Order	Completed	Link to .pdf
Selection	1	Ongoing	-
Fit model	2	No	-
Resolution and bias studies	2	No	-
Raw asymmetry and efficiency dependencies	3	No	-
VELO efficiency determination	4	No	-
Comparison with other methods	4	No	-
Comparison to Monte Carlo	5	No	-
Projected results and conclusion	5	No	-

Todo list

- Verify that the MatchLong efficiencies are the same as the StdAllNoPIDPions container
- Verify the L0 trigger condition for the 2016 data set.
- Actually get the VELO efficiencies in.

Earlier presentations

- "Hadronic tracking efficiency lines update", HLT Ops meeting 28-07-2017. [↗](#)
- "Update on detection efficiency/asymmetries - partial reconstruction method", T&A meeting 11-07-2017 [↗](#)
- "New D⁻-based tracking efficiency method using the turbo stream", S&A week 12-07-2016. [↗](#)
- "Detection asymmetries on turbo with persist reco", T&A meeting, 26-05-2016. [↗](#)
- "Detection efficiencies on turbo with persist reco", HLT operations meeting, 13-05-2016. [↗](#)

This topic: LHCb > Velo2Long

Topic revision: r8 - 2018-01-15 - LuciaGrillo



Copyright &© 2008-2021 by the contributing authors. All material on this collaboration platform is the property of the contributing authors.

or Ideas, requests, problems regarding TWiki? use [Discourse](#) or [Send feedback](#)