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Displaced Dimuon High Level Trigger

Complete:

Trigger outline

- events have to pass the L1 dimuon trigger
- L2 muons are reconstructed and filtered on
- primary vertex is reconstructed
- muon tracks are reconstructed using the L2 muons as seeds
- two muon tracks are combined (to build e.g. a J/psi) and required to be within a certain mass range
- The Kalman Vertex Fitter is applied on these two tracks
- A cut is applied on the decay length significance, on the χ^2 of the fit and on the angle between the momentum of the two combined tracks and the decay length

Usage for CMSSW_1_3_1_HLT6

- tcshell:

```
scramv1 project CMSSW CMSSW_1_3_1_HLT6
cd CMSSW_1_3_1_HLT6/src
eval `scramv1 run -csh`
project CMSSW
cvs co -r CMSSW_1_3_1_HLT6 HLTrigger/btau
scramv1 b
cd HLTrigger/btau
```

- modify `data/displacedmumu/PathBToJpsiToMumu.cff`,
`data/displacedmumu/L3ForDisplacedMumuTrigger.cff` and `test/hltBToJpsiToMumu.cfg`

What can be modified?

Here are just the most important modifications. Keep in mind, that if you change the transverse muon momentum, the minimum momentum for seeding and tracking should also be changed (lower than the filter cut)

in module `JpsitoMumuL2Filtered`

- momentum and eta cuts
- invariant mass of dimuon pair
- accomplanarity of the dimuons

in module `muTracks`

- the transverse momentum of the muon ($> 4\text{GeV}$)

in module `CandFromMumu`

- the invariant mass ($2.95 < m < 3.25$) and momentum of the mumu particle ($> 4\text{GeV}$)

in module `displacedJpsitoMumuFilter`

- minimal decay length significance (> 3)
- maximal normalised χ^2 of the Kalman Vertex Fitter (< 10)

- minimal cosine of the opening angle between the momentum of the two combined tracks and the decay length (> 0.9)

Review Status

Editor/Reviewer	Comments
LotteWilke - 27 Jul 2007	page author
JennyWilliams - 27 Mar 2007	edited to fit swguide general layout

Responsible: LotteWilke

Last reviewed by: Reviewer

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