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Swimming Tutorial: Swimming the Trigger

Overview

This tutorial is focussed on running a job to swim the trigger on Stripping17 data.

The tutorial is structured as a series of exercises of increasing complexity. By the end of the tutorial you should know how to obtain LHCb Event Model objects from the transient event store (TES), how to make histograms, how to create and use LHCb-specific Gaud tools, how to use relations tables associating Particles to MCParticles or Vertices. tables. You may also build on what you learnt earlier by either using your own Bs->Jpsi Phi selection, or re-using one of those used in the stripping, to write a MicroDST and analyse it. Depending on your knowledge of python, you may also experiment with making reasonably complex calculations using the contents of the (Micro)DST with your own pure python functions.

Pre-requisites

A working knowledge of the LHCb software and persistent formats is required, if lacking, have a look at the DaVinci tutorial. Due to the change in persistency format, special patch releases for Moore are required to swim stripping 17 data. These releases are being prepared and can be recognised by their version ending in gX. The first of these releases are available on afs and the grid: Moore v12r6p1g3 and Moore v12r8g2.

Working environment

We will be working with Moore v12r6p1g3 on lxplus.

```
SetupProject --build-env Moore v12r6p1g3
getpack Phys/Swimming v2r2
getpack AppConfig r130406
cd Phys/Swimming/example
```

Input data

Some input data is required. Because the input data needs to be split by TCK and therefore by Moore version, find the list of TCKs which is appropriate for the available patched Moore version.

```
SetupProject Moore v12r6p1g3
TCKsh
listConfigurations()
```

Now fire up the bookkeeping, select some Stripping17 data and filter by TCK before saving the PFNs.

```
lhcb_bkk
```

Make sure you know where your candidates are located on the DST, to check, use for example the dst explorer:

```
SetupProject Bender v18r2
dst-explorer YourDst.dst
```

Configuring for swimming the trigger

- Start from SwimTriggerB2JpsiX.py in Phys/Swimming
- Set the correct CondDB and DDDB tags (see table below).
- Set the trigger lines you want to swim (the Decision at the end of the name is mandatory).
- Set the location of your offline candidates; don't include /Particles
- Choose an appropriate single candidate selection method (random or first)

- Use Oracle if needed
- For the tutorial set the EvtMax to 25

Swimming the trigger

```
gaudirun.py $APPCONFIGOPTS/EnableCustomMainLoop.py SwimTrigger.py YourData.py
```

Moore version table

Swimming Tutorial: Saving the Turning Points

Once a DST with turning points on it has been created, they can be saved with a special DecayTreeTuple tool called TupleToolSwimmingInfo

Working environment

We will be working with DaVinci v29r1 on lxplus.

```
SetupProject  --build-env DaVinci v29r1
getpack Phys/DecayTreeTuple r130060
getpack Phys/Swimming v2r2
cd Phys/Swimming/example
```

Configuring

- Start from DecayTreeTuple.py in Phys/Swimming/example
- Set the correct path to the candidates
- `mDST = False`
- Set input file
- In case of a decay where the charge conjugated decay is not the same decay, take care to configure the branch for daughter information to apply to both charged states.

Tables

Database tags run in the pit.

start run - end run	CondDB tag	DDDB tag	Moore version
89333 - 90899	head-20110331	head-20110302	Moore_v12r5
91631 - 92316	head-20110512	head-20110302	Moore_v12r6p1
92317 - 94012	head-20110524	head-20110302	Moore_v12r6p1
94169 - 94386	head-20110622-Reco10	head-20110302	Moore_v12r6p1
95929 - 101011	head-20110622	head-20110302	Moore_v12r8
101012 - 101067	head-20110622	head-20110302	Moore_v12r9p1
101092 - 101121	head-20110722	head-20110722	Moore_v12r9p1
101122 - 104486	head-20110901	head-20110722	Moore_v12r9p1

Moore patch version per TCK

TCK	Moore version	Run Numbers
0x360032	v12r3	
0x480032	v12r4	
0x4A0033	v12r4	
0x5A0032	v12r5	
0x5B0032	v12r5	
0x5D0033	v12r5	
0x700034	v12r6p1	
0x710035	v12r6p1	
0x740036	v12r6p1	
0x6D0032	v12r6p1	91631 - 91658, 91919 - 92906
0x730035	v12r6p1	92929 - 94386
0x760037	v12r8	95929 - 100256
0x790037	v12r9p1	101373 - 101761
0x790038	v12r9p1	101762 - 104414

-- RoelAaij - 03-Nov-2011

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