Subject: How to distinguish between STT hits in barrel part and forward tracker?
Posted by Jennifer Pütz on Mon, 11 Apr 2016 13:08:06 GMT
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Hi everyone,

I want to get the number of Hits in the STT. Unfortunately, if I use

```
RhoCandidate * c;
PndPidCandidate *pidCand = (PndPidCandidate*)c->GetRecoCandidate();
pidCand->GetSttHits()
```

I get the number of hits in the STT and the fts.
Is there any way to distinguish between to distinguish these hits?

Cheers,
Jenny

Subject: Re: How to distinguish between STT hits in barrel part and forward tracker?
Posted by StefanoSpataro on Mon, 11 Apr 2016 13:13:01 GMT
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pidCand->GetTrackBranch() will return you different numbers for STT and FTS tracks.

Subject: Re: How to distinguish between STT hits in barrel part and forward tracker?
Posted by Jennifer Pütz on Mon, 11 Apr 2016 13:17:07 GMT
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Hi Stefano,

thanks for your quick answer. I already tried this, but if the particle is leaving hits in both parts, STT and fts, the number I get from pidCand->GetTrackBranch() is the same as for a particle which is only leaving hits in the fts.

Subject: Re: How to distinguish between STT hits in barrel part and forward tracker?
Posted by StefanoSpataro on Mon, 11 Apr 2016 13:23:42 GMT
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In theory the standard pattern recognition algorithms do not overlap tracks with both STT and FST hits, but they are always separated.
An alternative way would be to use FairLinks, but I don't have the details for such method.

Subject: Re: How to distinguish between STT hits in barrel part and forward tracker?
Posted by Jennifer Pütz on Wed, 22 Jun 2016 15:05:17 GMT
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Hi everyone,

some time ago I had the question how to distinguish between STTHits and FTS Hits. I still have this problem.

I simulated 100 piminus with boxgenerator using a theta range of [6 .. 9] degrees and a momentum range of p=[0.1 .. 0.7] GeV/c. (This momentum range corresponds to the

GeV/c.)
For the reconstruction, I used ideal PR with the condition of more than 3 hits in MVD, STT or GEM and ideal PID.

Nearly all events are looking like the one shown in the picture below.

The blue squares denote the MVD hits, the red squares are the GEM hits and the pink squares are the FTS hits. As you can see, there are no hits in the STT.
The next pictures show the number of hits in the MVD, STT and GEM detector for the reconstructed particle (looking at the same Evt).

And here you can see, that there are counted STT hits.

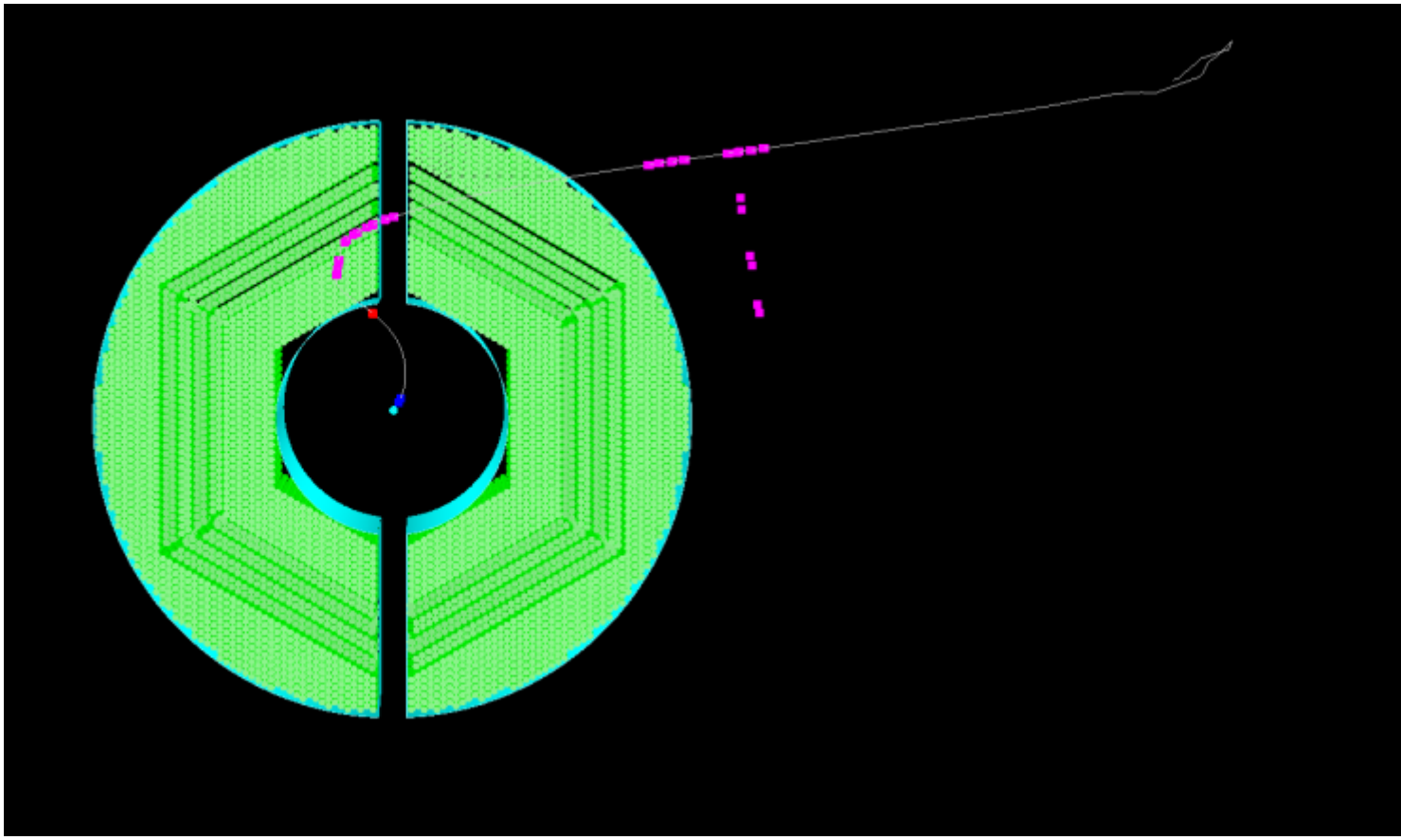
This means, that the selection criterion I mentioned above does not work because this pion would not be discarded.
At the moment, there is no chance for me to switch to a realistic PR.

Best regards,

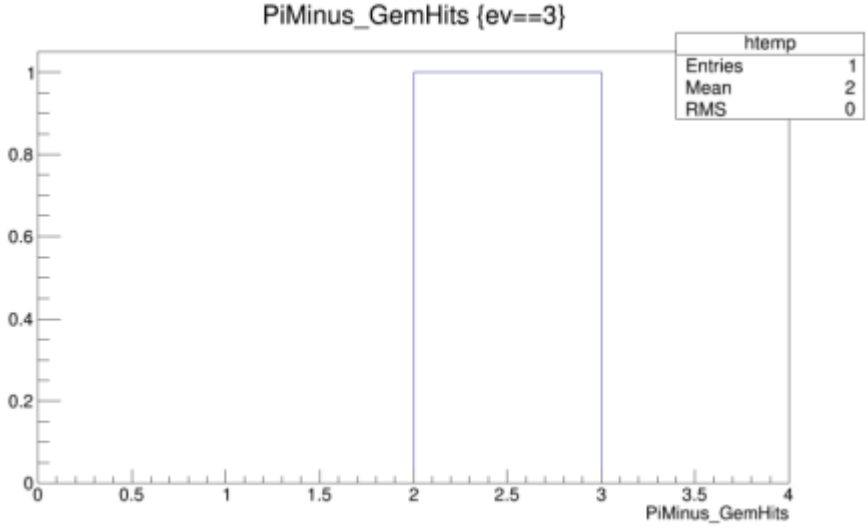
Jenny

File Attachments

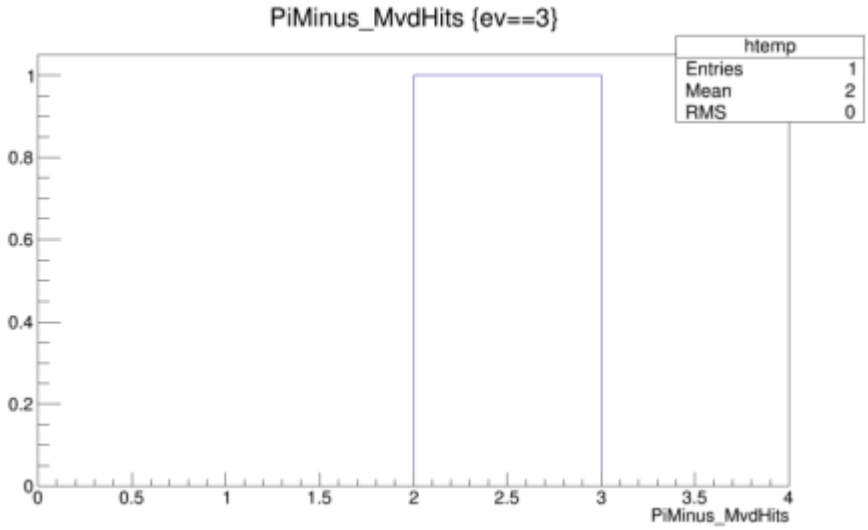
1) pion_8_6_degree_new_resize.png, downloaded 1527 times



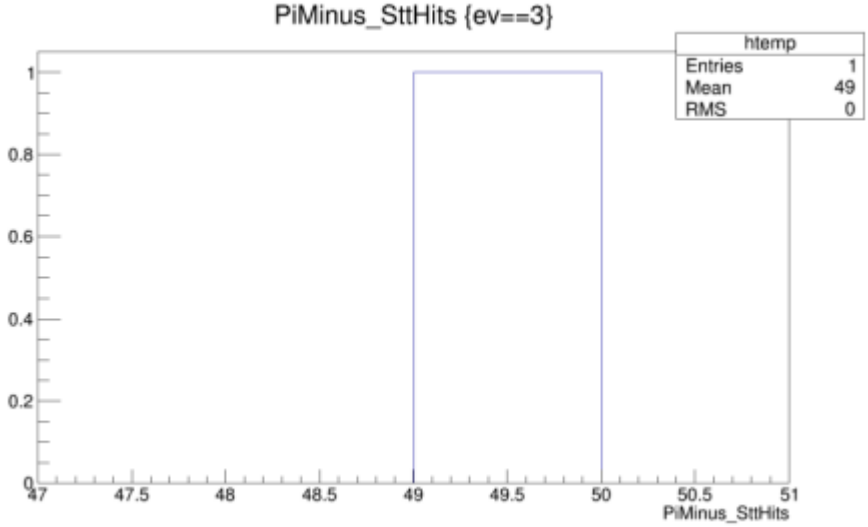
2) gem_hits.png, downloaded 1504 times



3) mvd_hits.png, downloaded 1522 times



4) stt_hits.png, downloaded 1541 times



Subject: Re: How to distinguish between STT hits in barrel part and forward tracker?
Posted by StefanoSpataro on Thu, 23 Jun 2016 00:30:37 GMT
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As I told you during the meeting, we have two separate PndTrack TClonesArrays for MVD+STT+GEM and MVD+FTS+GEM. This means you cannot have both STT and FTS in the same track.
The function PndPidCandidate::GetSttHits() returns the number of STT hits if you have the PndSttMvdGemTrackingIdeal and the number of FTS hits if you have the PndFtsTrackerIdeal. The two track branches are separate by the function PndPidCandidate::GetTrackBranch().

This means that if you want to select tracks with at least 3 STT hits, you should use the condition GetTrackBranch()==XX && GetSttHits()>=3, where XX is the index of the central tracking TClonesArray number (if you plot the GetTrackBranch() you will have only two numbers, the central track is the first). And if you want to have at least 3 FTS hits then GetTrackBranch()==YY and GetSttHits()=3.

You can check macro/run/plot_pid.C, and see how the histograms hSttHits and hFtsHits are filled.

In any case, if you hit particles between 6 and 9 degrees you won't have any STT hit.

Subject: Re: How to distinguish between STT hits in barrel part and forward tracker?
Posted by Jennifer Pütz on Thu, 23 Jun 2016 08:41:36 GMT
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Hi Stefano,

thank you very much for your answer. I misunderstood, how this works, but now it is clear to me.

Best regards
Jenny
