Subject: [FIXED] Real vs. Ideal Tracking - Ghosts?
Posted by Ralf Kliemt on Mon, 08 Apr 2013 08:15:41 GMT
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Hello everybody.

While going through the analysis tools I simulated quickly 1000 events of
Psi(3770) --> D+D- --> K-pi+pi+ K+pi-pi-.

Now at the D reconstruction I find much "dirt" in the mass spectrum. More unsettling is the spiky behavior. To see whats going on I did a MC truth match and tried the ideal Pattaern recognition as well.

The plots are attached below. My ideas so far are that the MC indexing is done by the first hit or something, which would be error prone. Also I think the Pattrern Recognition adds LOTS of ghosts and fakes mostly many in one event.

Cheers Ralf

File Attachments
1) Dplus-raw.pdf, downloaded 506 times
2) Dplus-raw-simple.pdf, downloaded 653 times
3) Dplus-truth.pdf, downloaded 530 times
4) Dplus-truth-simple.pdf, downloaded 512 times

Subject: Re: Real vs. Ideal Tracking - Ghosts?
Posted by StefanoSpataro on Mon, 08 Apr 2013 10:43:37 GMT
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About the MC indexing, this comes from the most common MC id present in the track. If more than one mc tracks are present in the same reco track, only the "majority" part is used as id. As far as it concerns the doubles, which trunk are you using? The last message I got from Gianluigi and Klaus is that doubles should be less than 1%.

Subject: Re: Real vs. Ideal Tracking - Ghosts?
Posted by Ralf Kliemt on Mon, 08 Apr 2013 11:05:37 GMT
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Hi Stefano,

The simulations were performed with a trunk from March. The MC tracking issue from Klaus was closed in the beginning of February.
So it's "new".

Cheers
Ralf

Subject: Re: Real vs. Ideal Tracking - Ghosts?
Posted by Gianluigi Boca on Mon, 08 Apr 2013 13:06:04 GMT
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Hi Ralf,
please update your trunk version of the
tracking
directory and tell me if you still see the problem.
I have been working a lot on that directory changing things back and forth, maybe by chance you have a bad version. The latest version should contain at most 1% ghosts.

Please try and tell me if that is NOT the case, thanks in advance
Gianluigi

ps
in the future the ghosts will be definitely removed at the pattern recognition level, I have that in my to do list.

Ralf Kliemt wrote on Mon, 08 April 2013 13:05Hi Stefano,

The simulations were performed with a trunk from March. The MC tracking issue from Klaus was closed in the beginning of February.
So it's "new".

Cheers
Ralf

Subject: Re: Real vs. Ideal Tracking - Ghosts?
Posted by StefanoSpataro on Mon, 08 Apr 2013 13:26:02 GMT
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(and if you could post here your dec sim digi reco pid and analysis macro I could do some tests this evening).

Subject: Re: Real vs. Ideal Tracking - Ghosts?
Posted by StefanoSpataro on Mon, 08 Apr 2013 21:01:17 GMT
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Hi Ralf,
I have done tests with the last trunk, and everything seems fine:

D+ invariant mass for all the combinations, ideal (blue) and real (red) tracking:

and with pid selection using montecarlo truth of kaons and pions:

Everything seems fine to me. I attach here the analysis macro I have used.

I have few comments to add.

I have used the following PndAnalysis constructor:

PndAnalysis* theAnalysis = new PndAnalysis("SttMvdGemGenTrack","FtsIdealGenTrack");

The system is not able to load them automatically, I think it should be stressed that one has to write the names of the TCAs. Not clear to me what is doing the code with the track objects.

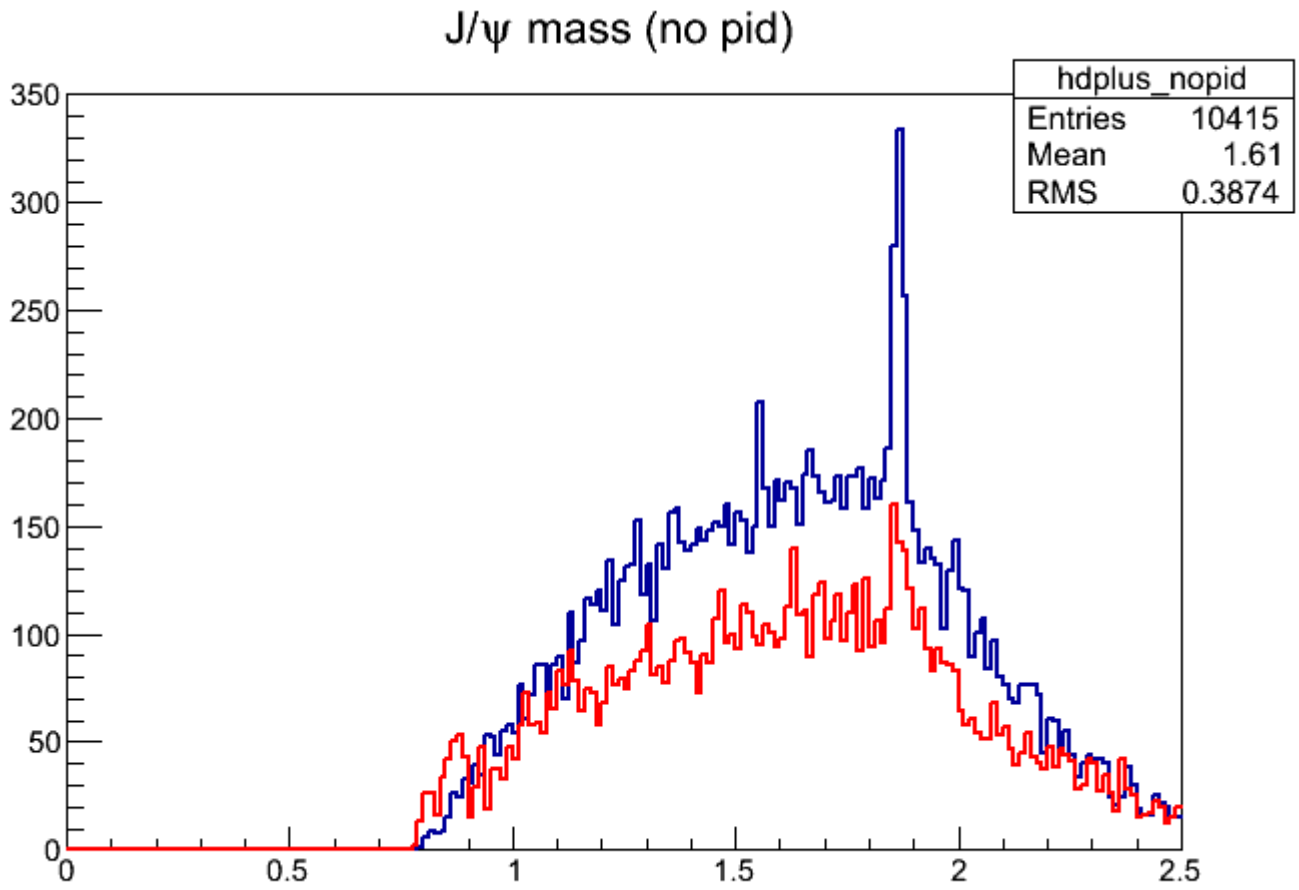
I have tried to do the "mother" mc identification:

mcm.SetType(dplus,"D+");

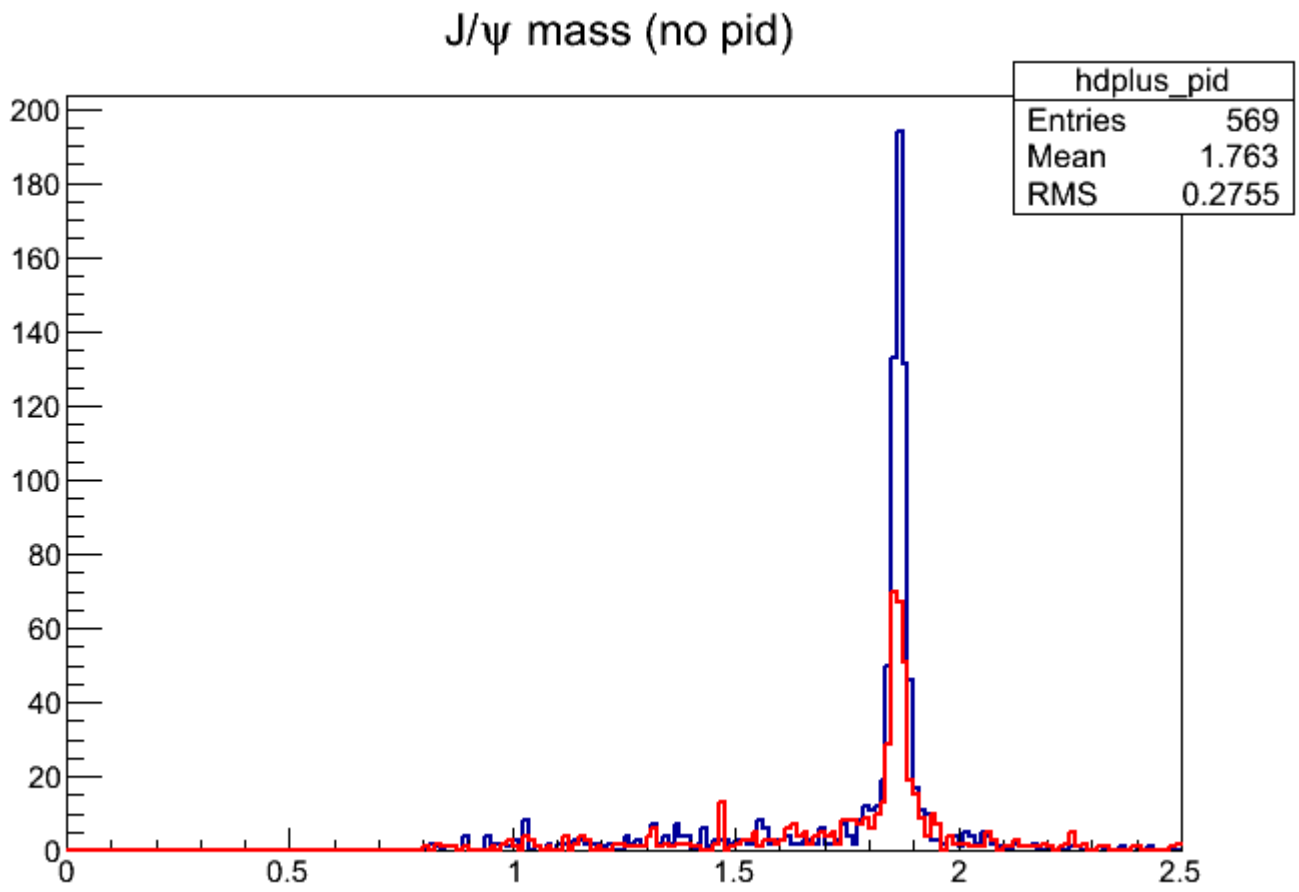
It is not working, while it was worlking for the simple particles. Maybe I have done something wrong (could you please correct me?) or maybe there is some bug in the PndMcMatch for composite candidates.

File Attachments

1) hdplus_nopid.gif, downloaded 1148 times



2) hdplus_pid.gif, downloaded 1213 times



3) anatut_psi2s.C, downloaded 451 times

Subject: Re: Real vs. Ideal Tracking - Ghosts?
Posted by Klaus Götzen on Tue, 09 Apr 2013 05:55:37 GMT
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Hi Stefano,

did you use evtgen->SetStoreTree() in simulation? If not, the mc matcher cannot do composites correctly.

You could also try with

mcm.SetType(dplus, 411)

to be independent of any naming scheme. Just to mention, charged conjugates are not automatically set, so you need to set the type for D+ and D- separately.

Best,
Klaus

Subject: Re: Real vs. Ideal Tracking - Ghosts?
Posted by StefanoSpataro on Tue, 09 Apr 2013 19:02:59 GMT
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Hi,
you are right, I had a SetStoreTree(kFALSE). Setting it to kTRUE now the D+ id works.
Thanks