Subject: [CLOSED] Wrong particle in FillList
Posted by Lu Cao on Tue, 30 Jul 2013 11:58:36 GMT
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Hi all,

In the analysis for the decay pbp->Ds-(KKpi) Ds+ (e+ nu_e eta(3pi)), I use the following PID algorithm to fill the candidates list as

```
theAnalysis->FillList(pipbase, "PionLossePlus");
theAnalysis->FillList(pimbase, "PionLosseMinus");
theAnalysis->FillList(kapbase, "KaonLossePlus");
theAnalysis->FillList(kambase, "KaonLosseMinus");
theAnalysis->FillList(rawgambase,"Neutral");
```

then, I check the PDG numbers of candidates in each list. In every event, some particles with wrong PDG are found.

```
Found wrong piplus in pipbase list: evt = 1 j = 1 PDGCode = -11
Found wrong piplus in pipbase list: evt = 1 j = 2 PDGCode = 11
Found wrong piplus in pipbase list: evt = 1 j = 3 PDGCode = 321
Found wrong piplus in pipbase list: evt = 1 j = 4 PDGCode = -11
--------------------------------------------------
Found wrong piminus in pimbase list: evt = 1 j = 1 PDGCode = -11
--------------------------------------------------
Found wrong gamma in gambase list: evt = 1 j = 1 PDGCode = 2112
Found wrong gamma in gambase list: evt = 1 j = 2 PDGCode = 2112
Found wrong gamma in gambase list: evt = 1 j = 3 PDGCode = -11
Found wrong gamma in gambase list: evt = 1 j = 6 PDGCode = -211
Found wrong gamma in gambase list: evt = 1 j = 7 PDGCode = 11
Found wrong gamma in gambase list: evt = 1 j = 10 PDGCode = 2112
Found wrong gamma in gambase list: evt = 1 j = 11 PDGCode = 2112
Found wrong gamma in gambase list: evt = 1 j = 12 PDGCode = -11
--------------------------------------------------
Found wrong kaminus in kambase list: evt = 1 j = 0 PDGCode = -211
Found wrong kaminus in kambase list: evt = 1 j = 1 PDGCode = -11
--------------------------------------------------
Found wrong kaplus in kapbase list: evt = 1 j = 0 PDGCode = 211
Found wrong kaplus in kapbase list: evt = 1 j = 1 PDGCode = -11
Found wrong kaplus in kapbase list: evt = 1 j = 2 PDGCode = 11
Found wrong kaplus in kapbase list: evt = 1 j = 4 PDGCode = -11
--------------------------------------------------
```

This seems not reasonable. I'm using the version #18621.

Best regards,
Lu

Subject: Re: Wrong particle in FillList
Posted by Simone Esch on Tue, 30 Jul 2013 12:27:22 GMT
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Hello Everyone!

I see the same things in my Lambda LambdaBar analysis on Rev:20693

I made the following histogram to show some numbers:

On the X-Axis are my four lists i filled. On the Y-axis are from bin one to four the right assigned, bin 5 is the sum of wrong assigned particles and from bin 6 to 15 the type of the wrong assigned particles.

I filled the lists the following:

```
theAnalysis->FillList(protonplus,"ProtonLoosePlus");
theAnalysis->FillList(protonminus,"ProtonLooseMinus");
theAnalysis->FillList(pionplus,"PionLoosePlus");
theAnalysis->FillList(pionminus,"PionLooseMinus");
```

And I aked for the MC pdg code like that:

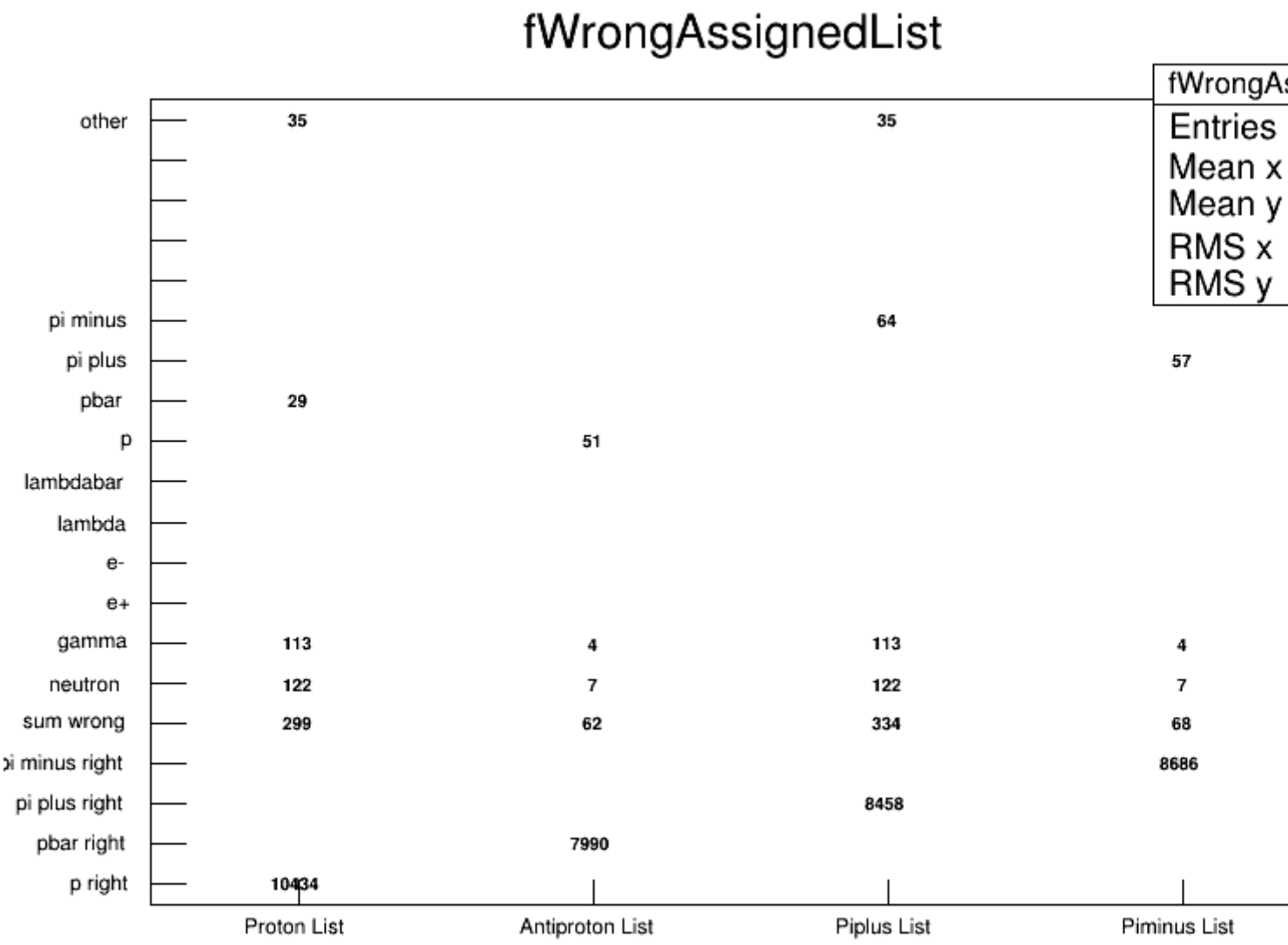
```
protonplus[y]->GetMcTruth()->PdgCode()
```

Best regards

Simone

File Attachments

1) wrongassignedlist.png, downloaded 1892 times



Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Tue, 30 Jul 2013 13:43:41 GMT
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Hi Lu,

indeed, it looks strange, in particular, that you have charged particles in your gamma list. One issue with your code is, that the keywords are wrong; use 'PionLoosePlus' instead of 'PionLossePlus' etc. Your unknown keyword 'Losse' should lead to default 'All', meaning, that no PID cut is applied.

Maybe you could do an svn update on trunk/rho and trunk/PndTools/AnalysisTools and try again with the correct keywords.

In general, also with correct working PID algorithms, you always might have some wrong particles (from MC truth point of view) in the lists due to misidentification.

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Tue, 30 Jul 2013 19:55:17 GMT
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Which PID algorithms are you using?

Subject: Re: Wrong particle in FillList
Posted by Lu Cao on Tue, 30 Jul 2013 20:27:13 GMT
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Hi Klaus,

First, sorry for mistyping~~

I have updated the whole framework to the latest version #20914, and found the FillList works quite well with "Loose" and even "All" PID algorithm in the charged particle cases, where almost no wrong filling.

However, for the gamma, the pdg code of all candidates are 0. I checked that in MC truth. They are correct in there.

In the analysis macro, I use

Quote:
```
PndAnalysis* theAnalysis = new PndAnalysis();
RhoCandList gamma;

theAnalysis->FillList(gamma, "PidAlgoIdealNeutral");

while (theAnalysis->GetEvent() && i++<nevts)
{for (j=0;j<gamma.GetLength();++j)
   {cout << "gamma =" << gamma[j]->PdgCode() << endl;
      }
}
```

Best regards,
Lu

Subject: Re: Wrong particle in FillList
Posted by Simone Esch on Wed, 31 Jul 2013 06:54:15 GMT
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Ideal PID

theAnalysis->FillList(protonplus,"ProtonLoosePlus");
theAnalysis->FillList(protonminus,"ProtonLooseMinus");
theAnalysis->FillList(pionplus,"PionLoosePlus");
theAnalysis->FillList(pionminus,"PionLooseMinus");

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Wed, 31 Jul 2013 07:05:58 GMT
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Does it work in this way ideal PID?

Subject: Re: Wrong particle in FillList
Posted by Simone Esch on Wed, 31 Jul 2013 07:21:54 GMT
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I read this in the tutorial:

Quote:
// ... in event loop ...
theAnalysis->FillList(looseElectrons, "ElectronLoose", "PidAlgoEmcBayes");
theAnalysis->FillList(tightKaonsPlus, "KaonTightPlus", "PidAlgoDrc");
When this parameter is not specified, it defaults to PidAlgoIdealCharged (be aware, that this one sets MC truth PID probabilities, i.e. the true particle species gets P=1, the others P=0!). There is even the posibility to combine the information of various algorithms with

and at least what I saw in the code I can confirm this.

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Wed, 31 Jul 2013 07:26:21 GMT
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Hi,

yes, without a keyword for an algorithm it should set the default 'PidAlgoIdealCharged'.

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Wed, 31 Jul 2013 07:27:30 GMT
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Good to know, I suppose this was changedsince I read the tutorial ages ago

Subject: Re: Wrong particle in FillList
Posted by Lu Cao on Wed, 31 Jul 2013 13:16:34 GMT
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Hi all,

Just forgot one point, my last checking was on a small sample of event (100 evt). I'm not sure how does it work with larger statistics. Anyway, I will double check that soon. And the case for neutral particles looks unreasonable even in 100 evt.

Best regards,
Lu

Subject: Re: Wrong particle in FillList
Posted by Simon Reiter on Wed, 31 Jul 2013 17:35:35 GMT
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Hi,
I'm not sure if it is corrected in the trunk, but I found something weird. While using the release APR13 I searched for pions and checked their pdg.

```
theAnalysis->FillList(mctrk, "McTruth");
theAnalysis->FillList(pions, "PionLooseCharged");

for(Int_t i=0;i<pions.GetLength();i++) {
  if (!mcm.MctMatch(pions[i], mctrk)){
    ...
  }
}
```

At ... I printed the McIdx of "pions", the PdgCode of "pions" and the "PdgCode" of mctrk.

McIdx: 2311 pdg: 211
McPdg of 2311: -211

McIdx: 174 pdg: 211
McPdg of 174: 1000010020
.
.
.

While MctMatch is comparing the pdgcode of "pions[i]" and the one pointed to in mctrk, there shouldn't be any difference, if "McIdx" of "pions[i]" is set correctly. But there are plus-minus

problems..
Additionally what is pdg 1000010020? This number is set by "McTruth"!!!

Is the default PID "PidAlgoIdealCharged" with MC information or not? And will this be corrected in the release?

Best regards,
Simon

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Wed, 31 Jul 2013 19:34:18 GMT
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Hi Simon,

the keyword "PionLooseCharged" does not exist. It should be either "PionLoose" for charged pions (there are no pi0 directly accessible), or you can use "PionLoosePlus" or "PionLooseMinus".

Maybe you could try that and look, whether it fixes the strange behaviour.

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by Simon Reiter on Mon, 05 Aug 2013 10:56:24 GMT
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After i tried to understand the whole FillList procedure, it doesn't seem to make any differences, but I tried it though. Didn't changed anything. Still get a lot of pions kicked just because of the wrong charge.

And still got this high pdgcode (1000010020) in the mctruth-list.

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Mon, 05 Aug 2013 13:16:34 GMT
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I would suggest to attach your sim digi reco pid analysis and dec macros, so that we could perform some tests.
The pdg code so high belongs to ions.

Subject: Re: Wrong particle in FillList

Posted by Simon Reiter on Mon, 05 Aug 2013 13:53:09 GMT
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Here they are. Hope, you find something.

File Attachments
1) macros.tar.gz, downloaded 445 times

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Thu, 08 Aug 2013 10:24:49 GMT
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Sorry,
which revision are you using? I tried with the today trunk and I got the following:

```
************************************************************
    initialisation for run id 1375950835
************************************************************
-I- FairRunTimeDB::InitContainer() FairBaseParSet
-I- FairRunTimeDB::InitContainer() PndSensorNamePar
-I- FairRunTimeDB::InitContainer() PndMultiFieldPar
-I- FairRunTimeDB::InitContainer() ANAPidSelections
[ERROR  ] init() ANAPidSelections  not initialized
Error in <FairRuntimeDb::initContainers()>: Error occured during initialization
Error: Invalid type 'PndMcTruthMatch' in declaration of 'mcm' ana_pionangle.C:74:
Error: Symbol PndMcTruthMatch mcm is not defined in current scope  ana_pionangle.C:74:
*** Interpreter error recovered ***
```

Subject: Re: Wrong particle in FillList
Posted by MartinJGaluska on Thu, 08 Aug 2013 11:38:20 GMT
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Hello Stefano,

Simon uses the PandaRoot release apr13 with external packages sep12.

Best wishes,
Martin

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Thu, 08 Aug 2013 11:40:00 GMT
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Hi,

the class PndMcTruthMatch has been removed from trunk. The functionallity has been added

to PndAnalysis. What you do now is

```
PndAnalysis *theAnalysis = new PndAnalysis();
RhoCandList list;
...
list.SetType(myPdgCode);
...
theAnalysis->McTruthMatch(list[j]);
```

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Thu, 08 Aug 2013 11:51:25 GMT
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There were many changes since apr13 in the rho package, then maybe the problem is already fixed. Is it possible to check the plots and the macro with the latest trunk? We won't debug the apr13 release.

Subject: Re: Wrong particle in FillList
Posted by Simon Reiter on Thu, 08 Aug 2013 12:08:46 GMT
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I intend to compare apr13 and trunk. Shall I redo the full simulation or just the analysis for this test?

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Thu, 08 Aug 2013 12:29:55 GMT
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The data structure has changed, you need to redo the full chain.

Subject: Re: Wrong particle in FillList
Posted by asanchez on Thu, 08 Aug 2013 12:30:34 GMT
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Hi Simon,
I would redo everything (MC, analysis ..)
from the beginning.
cheers
Alicia.

Subject: Re: Wrong particle in FillList
Posted by Jens Sören Lange on Thu, 08 Aug 2013 13:36:23 GMT
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Hi Stefano,

1.) At first, please see your own meeting minutes

http://panda-wiki.gsi.de/cgi-bin/view/Computing/Minutes06May2013

"New pandaroot release APR13. The new pandaroot release has been created, based on sep12 external packages. It contains stable code for the analysis, and it is strongly suggested to use it."

We understand that now (with your email today) it seems you change the official recommendation (-> use trunk instead of release!), but please keep in mind that Simon must deliver his thesis in 4 weeks from you.

2.) A release is a release. Bug fixing should be supported (to some level). It is only 3 1/2 months that the release is out. If support is stopped after such a short time, we can never finish any reasonable results.

3.) It is not only Simon. We are preparing many results for the CHARM'13 (Y(4260), h_c', 3F4 state radiative decays, to be shown for the first time). It is completely out of question that 3 weeks before the conference we start re-writing everything for the trunk.

4.) Actually, Simon tried to switch to the trunk.

The discussion is here

https://forum.gsi.de/index.php?t=msg&th=3915&start=0&rid=2067&S=257ebb8477b8bb15c64c915092466140

More problems. Again, that problem is the trunk.

The proposed solution from Klaus (see the final posting) is to change the pointer "by hand" event-by-event
"Up to now I was not able to identify the bug. Finally I explicitly compared that pointer with something like
RhoCandidate *truth = piplus[ipiplus]->GetMcTruth();
if (truth != (RhoCandidate*)0x8011) ..."

We think that this is not a reasonable option.

5.) trunk is trunk. There is no new rho release so far (at least we think there is not). Sure, development takes time and Ralf is on it, but even if somehow we manage to switch to the trunk and actually (-> wishful thinking!!) to have any working chain, it means that stuff is changing on a daily basis and maybe tomorrow the macros would not run anymore.

So, in order to keep deadlines (Simon's thesis and CHARM'13), we decide not to switch to the trunk right now.

greetings - Simon, Martin, Sören

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Thu, 08 Aug 2013 14:05:54 GMT
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Hi Soeren,

Quote:
We understand that now (with your email today) it seems you change the official recommendation (-> use trunk instead of release!), but please keep in mind that Simon must deliver his thesis in 4 weeks from you.

I am not changing the official recommendation, apr13 is still the suggested code. We have a list of bugs found after the creation of the release, and some of them are already fixed in the trunk. Maybe new bugs are also present in the trunk. I am just saying that this bug could be fixed. Could.

Quote:
2.) A release is a release. Bug fixing should be supported (to some level). It is only 3 1/2 months that the release is out. If support is stopped after such a short time, we can never finish any reasonable results.

The release is able to perform all the basic features, more or less. The McMatch could have problem, but there are other ways to do mc selections, i.e. using the MC index as done in the previous analyses and in the past.

Now we have two different analysis code. If Ralf or Klaus want to spend some time trying to debug the apr13 one, fine. But, again, the MC id can be performed in other ways before the bug is found.
I.e. you will fill a tcandlist with PionVeryLoose, you loop inside the tcandlist, retrieve the corresponding mc index, and create a new TCandList with only the particles you need.

Quote:
3) 4) 5)

Again, my proposal was to switch to the trunk to help Klaus and Ralf debugging, not to run analysis on the trunk. I believe the apr13 should be still fine for analysis. It depends on the features which are going to be used.

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Thu, 08 Aug 2013 16:48:06 GMT
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Hi Sören,

I also like to give comments to some of your points.

I fully agree to 1) and 2), that there should be some stable and reliable environment, which is well defined. However, at the moment we had some significant restructuring fully absorbing the tiny manpower dedicated to analysis tools. Many bugs are showing up now, when people seriously start using the tools, which is very nice and welcome! But you cannot expect software to be bugfree, when only a small number of people try to use it at all, even if now it's suddenly very urgent that everything works flawless...

Concerning 4), you might have misunderstood my suggestion for a workaround. I reported, that I also encountered a strange error once in 20000 events. Thus when catching this one flawed pointer by hand it worked for the rest of the events. Therefore I suggested to try, whether it is just this one occasion but putting that 'dirty fix'. I of course agree, that we have to identify the bug and put a real fix.

What suprises me is, that you are aiming to show results for the first time in three weeks from now on a international workshop, which in principle have to be accepted by the publication committee and/or speakers board. According to our publication rules, a detailed analysis document has to be prepared and it has to be presented in a session open to all collaboration members, also for MC analyses. I know, that in the past things were handled quite relaxed, but with new results we really should be very careful. I hope you agree...

So, to summarize: We are working on the stuff to make it more stable, and surely some fixes will be done in apr13 until a new release is created with the restructured rho package. But it simply takes time, and we are just a few people.

Best regards,
Klaus

Subject: Re: Wrong particle in FillList
Posted by Jens Sören Lange on Thu, 08 Aug 2013 19:51:33 GMT
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Hi Klaus,

first of all, of course we know that you and Ralf are working hard on the rho update and that it takes time. But changing back and forth between release and trunk for us and our macros just brings too many problems. More problems than benefit.

About the talk, please don't worry. This is an official talk assigned by the speaker's board. Volker Metag is the assigned referee. We will have the rehearsal a few days before the talk and follow Volker's advice and decision what to show and what not.

The plan is the following.

1.) Any of the results in this talk will be attached with a personal name of the student (or me) who did the analysis.
And this is the only time that the results will be shown.
The results will not be open for more talks, so there is no danger that they would be shown by someone not being able to report exactly what has been done, and what not. This means that e.g. they will not be shown at PHIPSI'13, MENU'13 or HADRON'13.

2.) We will be only using the apr13 release, so it is (hopefully) safe. And only results which are consistent with resolution published before in the physics book will be shown. The momentum resolution is anyway much larger than other experiments because of the high fixed target boost, so the invariant mass resolution is maybe not the issue and safe to show.

3.) But I agree with you. If it is really the case that we can not evaluate any reconstruction efficiency (because MCTruth is not propagated into the rho TCandidates) then we cannot show. I would only show invariant mass resolutions then.

4.) I didn't know that talks have the requirements of additional analysis documents. There was no information so far from the speakers board. Can you maybe send around the analysis documents of the last few talks at conferences? I can of course provide a draft of an analysis document. 50% of the talk is results which anyway have been shown at Panda meetings before (X(3872) resonance scan or h_c' recoil mass results - now improved by Simon - in my talk December 2012). But an example of an analysis document would be nice.

cheers, Soeren

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Thu, 08 Aug 2013 20:18:12 GMT
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Quote:3.) But I agree with you. If it is really the case that we can not evaluate any reconstruction efficiency (because MCTruth is not propagated into the rho TCandidates) then we cannot show. I would only show invariant mass resolutions then.

Again, McMatch object is not working, but the montecarlo indices are properly propagated and can be used to show efficiencies (GetMicroCandidate()->GetMcIndex()). At least, I have seen plots and number satisfactory using the McIndex and apr13, w/o McMatch object.

Quote:
4.) I didn't know that talks have the requirements of additional analysis documents. There was no information so far from the speakers board. Can you maybe send around the analysis documents of the last few talks at conferences? I can of course provide a draft of an analysis document. 50% of the talk is results which anyway have been shown at Panda meetings before (X(3872) resonance scan or h_c' recoil mass results - now improved by Simon - in my talk December 2012). But an example of an analysis document would be nice.

I think this document was not approved yet by the collaboration board, but only discussed in the executive. Then maybe it is not yet "operative". I am not inside the CB then I am only guessing.

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Fri, 09 Aug 2013 06:10:45 GMT
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Hi,

yes, Stefano is right I think. I was a bit ahead of time, the Publication Policy is not official up to now. When it is approved by SPC, it's fine I guess.

Concerning the MC truth match, I try to get it running for apr13 asap.

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Fri, 09 Aug 2013 07:52:01 GMT
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Hi,

just wanted to report, that I just checked out release/apr13 (so, no 'svn update', but a real new check out), and all tutorial macros with all functionallity worked out of the box.

So, when somebody has problems, I just can tell, that everything seems to work properly in the unaltered release/apr13 version.

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by Elisabetta Prencipe (2) on Fri, 09 Aug 2013 07:58:30 GMT
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Hello Klaus,

I can confirm what you say here about the 'old' unchanged release apr13. The problems come when one does the update. In such a case, it is much more safe (my experience) to use the trunk-rev23001.

Would you please write down in the forum which is the revision of pandaroot that one should use in order to be 'safe' in the release apr13, please? This would help a lot beginners like me.

Elisabetta

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Fri, 09 Aug 2013 08:20:45 GMT
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I do not understand.
Doing the checkout of the full apr13, the release is fixed and with a svn update nothing should change. Or are you speaking about the trunk update?

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Fri, 09 Aug 2013 08:31:08 GMT
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Hi,

I'm also a bit confused now. After checking out release/apr13, 'svn info' gives:

URL: URL: https://subversion.gsi.de/fairroot/pandaroot/release/apr13
Repository Root: https://subversion.gsi.de/fairroot
Repository UUID: 0381ead4-6506-0410-b988-94b70fbc4730
Revision: 21008
Node Kind: directory
Schedule: normal
Last Changed Author: spataro
Last Changed Rev: 19940
Last Changed Date: 2013-05-23 17:35:30 +0200 (Do, 23 Mai 2013)

Elisabetta, did you try an 'svn status' or 'svn diff' to show changes in your directory compared to original release/apr13? Maybe there are some changes which you are not aware of anymore...

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Fri, 09 Aug 2013 08:51:52 GMT

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The "original" apr13 was modified to fix 2 bugs, but in theory once you do the svn co you should have always the latest version. And the revdoes not correspond to the trunk revision.

Subject: Re: Wrong particle in FillList
Posted by Elisabetta Prencipe (2) on Fri, 09 Aug 2013 09:30:06 GMT
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Hi all,

the revision of the release apr13 which I used yesterday is:
revision 21003. I had built a complete new folder, as too many changes/update can produce troubles.

I am not saying that macros are not running in apr13. I am saying that I got strange results compared to the results which I got 2 weeks ago, with a different revision (who-remembers-what-was-that-revision-2-weeks-ago).
I am not using apr13 at all since yesterday.
I think I am not going to use it in the future.
Now I am using the trunk-rev23001.

Elisabetta

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Fri, 09 Aug 2013 10:12:32 GMT
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The release is not touched since 3 months, after 19940 all the versions are the same, with the same code.

Subject: Re: Wrong particle in FillList
Posted by MartinJGaluska on Fri, 16 Aug 2013 11:02:09 GMT
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Quote:
Again, McMatch object is not working, but the montecarlo indices are properly propagated and can be used to show efficiencies (GetMicroCandidate()->GetMcIndex()). At least, I have seen plots and number satisfactory using the McIndex and apr13, w/o McMatch object.

Hello Stefano,

Simon and I just had a discussion on what the suggested method of determining efficiencies is (for release apr13). It seems we both understood it differently. Could you please clarify it a little more (possibly with a few lines of example code)?

Thank you,
Martin

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Fri, 16 Aug 2013 11:21:06 GMT
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theAnalysis->FillList(kp, "KaonAllPlus");

```
if (kp.GetLength()!=0)
      {
         for (j=0;j<kp.GetLength();++j)
         {
           truth=kp[j]->GetMcTruth();
           if(!truth) continue;
           if(truth->PdgCode()==321)
            {
               recokp.Put(kp[j]);
            }
         }
      }//end of if(kp.GetLength()!=0)
```

And you use your recokp TCandList, with the identified mc kaons.
It should work in this way, I suppose.

Subject: Re: Wrong particle in FillList
Posted by MartinJGaluska on Fri, 16 Aug 2013 11:32:02 GMT
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Thank you. Do I understand it correctly that theAnalysis->McTruthMatch(...) should be avoided (at the moment)?

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Fri, 16 Aug 2013 11:55:29 GMT
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Hi,

considering my last tests with the tutorial macros, the PndAnalysis::McTruthMatch should work properly. There were some problems with the mother-daughter-relations, which should be fixed meanwhile.

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by MartinJGaluska on Fri, 16 Aug 2013 13:03:26 GMT
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Thank you, Klaus! So the only thing which should be avoided (for now) is the

theAnalysis->FillList(kp, "KaonLoosePlus");

(I mean using MC truth as PID)
or was it tested to work properly now, too?

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Fri, 16 Aug 2013 13:20:03 GMT
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Hi,

concerning the true PID (I guess you mean PidAlgoIdealCharged) I didn't test it myself. Usually I test whether the macros in tutorials/rho run properly and the output looks reasonable.

But since in the example also true PID is used for some histos, leading to reasonable results, it should work in principle. What I did there is to select true PID depending on the McTruthMatch.

```
int PndTutAnaTask::SelectTruePid(PndAnalysis *ana, RhoCandList &l) {
 int removed = 0;
 for (int ii=l.GetLength()-1;ii>=0;--ii) {
  if ( !(ana->McTruthMatch(l[ii])) ) {
   l.Remove(l[ii]);
   removed++;
  }
 }
 return removed;
}
```

Best,
Klaus

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Fri, 16 Aug 2013 13:22:51 GMT
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Hi Klaus,
let me remind you that the "remove" function is dangerous, and that it is better to add into a new TCandList

Subject: Re: Wrong particle in FillList
Posted by Klaus Götzen on Fri, 16 Aug 2013 13:38:38 GMT
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I love that kinda risky life...

But I think removing staring from the end of the list should be save.

Subject: Re: Wrong particle in FillList
Posted by Simon Reiter on Fri, 16 Aug 2013 20:40:31 GMT
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Oh no,

now I'm more confused than before. The GetMcTruth() seems to be too difficult for me. I simulated 2000 events and used the following code:

```
PndAnalysis* theAnalysis = new PndAnalysis("SttMvdGemGenTrack","FtsIdealGenTrack");
theAnalysis->FillList(piplus, "PionLoosePlus",pidalgos);
theAnalysis->FillList(mcpiplus, "PionLoosePlus");
for (Int_t ipiplus=0;ipiplus<piplus.GetLength();++ipiplus){
  if(piplus[ipiplus]->GetMcTruth()) {
    if(!theAnalysis->McTruthMatch(piplus[ipiplus]))
                //(1) pointer set, but no McTruthMatch
  } else
                //(2) pointer not even set
}
for (Int_t ipiplus=0;ipiplus<mcpiplus.GetLength();++ipiplus){
  if(mcpiplus[ipiplus]->GetMcTruth()) {
    if(!theAnalysis->McTruthMatch(mcpiplus[ipiplus]))
                //(3) pointer set, but no McTruthMatch
  } else
                //(4) pointer not even set
}
```

On every marker, I implemented a counter, to check, what is working in which way. But the result was again confusing.

| has not even a truth pointer | has a truth pointer but McTruthMatch failed | number of particles
---
PID | 15 | 2809 | 9031
MC | 28 | 847 | 9558 // in this case: MC=PidAlgoIdealCharged

I understand, that with a pid algorithm the McTruthMatch failed so often. I mean, the actual pid is crap (or "not the best one"). As I understood right, the pointer is set after track reconstruction, and just the particles are identified wrong. Even that some of them didn't have a pointer makes sense to me. But why are in the PidAlgoIdealCharged-list so many candidates without a pointed and, that's what I was really wondering about, didn't pass the McTruthMatch!?

This time, I'm using trunk, rev 21245!!!

Additionally: What are the criteria for setting the truth pointer? And shall I change theAnalysis->FillList(mcpiplus, "PionLoosePlus") to something like theAnalysis->FillList(mcpiplus, "PionAllPlus");
for(int i=0;mcpiplus.GetLength(),i++) {
  if(theAnalysis->McTruthMatch(mcpiplus[i]))
    mcpiplustrue.Add(mcpiplus[i]); // mcpiplustrue as a new RhoCandList
}

Thanks in advance
Simon

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Sat, 17 Aug 2013 14:36:29 GMT
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There are four ways for the MC association:

a) GetRecoCandidate()->GetMcIndex()
b) GetMcTruth()
c) PidIdealCharged algorithm
d) McTruthMatch

Why don't you start from the first one a), as suggested several messages ago, which will work for sure? (at least it is the standard)
You can try also b), which should work also. If the truth pointer is not associated, it means that most probably the track is made of noise hits (i.e.mvd oixels), then there is no MC association.

c) and d) could have still problems, but if you use one to check the other we cannot understand a lot.

Subject: Re: Wrong particle in FillList
Posted by MartinJGaluska on Mon, 19 Aug 2013 11:35:16 GMT
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Stefano Spataro wrote on Sat, 17 August 2013 16:36There are four ways for the MC association:

a) GetRecoCandidate()->GetMcIndex()
b) GetMcTruth()
c) PidIdealCharged algorithm
d) McTruthMatch

Why don't you start from the first one a), as suggested several messages ago, which will work for sure? (at least it is the standard)
You can try also b), which should work also. If the truth pointer is not associated, it means that most probably the track is made of noise hits (i.e.mvd oixels), then there is no MC association.

c) and d) could have still problems, but if you use one to check the other we cannot understand a lot.

Simon and I have just discussed this issue and we will write a macro checking possible problems in trunk. We believe that filling four lists (one for each way of accessing the mc truth information) of a given particle type -- let's say pions -- for some simulation would be the best way. Each list will be cross-checked with each of the other methods. We expect to be able to give you an update by the end of the week.

Subject: Re: Wrong particle in FillList
Posted by StefanoSpataro on Mon, 19 Aug 2013 13:35:53 GMT
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As said in the SeeVogh, I close this topic.
Please report current problems in new forum threads.
