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Subject: Update Notes

Posted by [Ralf Kliemt](#) on Tue, 02 Jul 2013 14:08:13 GMT

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Revision 20579:

Changed (hopefully all) the way the B field was retrieved. There should be no hardcoded 2 T anymore.

Ralf

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Subject: Re: Update Notes

Posted by [Ralf Kliemt](#) on Tue, 02 Jul 2013 14:51:06 GMT

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Revision 20582:

Moved Truth matching to PndAnalysis. Removed the PndMcTruthMatch class to avoid confusion with the truthmatching before the Analysis stage.

Use it to match also composites and decay trees like:

```
PndAnalysis* theAnalysis = new PndAnalysis ();
RhoCandidate* cand;
RhoCandList list;
int matchlevel=2; //0-2, default 2
bool verbose=false; //default false
...
```

```
//Matching on candidate:
theAnalysis->McTruthMatch(cand);
// OR with more options
theAnalysis->McTruthMatch(cand, matchlevel, verbose);
```

```
//Matching a full list (same options as above possible):
theAnalysis->McTruthMatch(list);
```

Cheers  
Ralf

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Subject: Re: Update Notes

Posted by [Stefano Spataro](#) on Wed, 03 Jul 2013 21:09:08 GMT

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Sorry but I have not well understood.  
In order to find the mc match object, after the:

```
theAnalysis->McTruthMatch(cand);
```

what should one do? Just use `RhoCandidate* GetMcTruth()` or something different?

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Subject: Re: Update Notes  
Posted by [Ralf Kliemt](#) on Thu, 04 Jul 2013 05:33:53 GMT  
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Hi Stefano.

Yes.

To explain it in more detail:

Upon the first FillList in one event the MC Truth tree is built and each final state particle (the measurement) will get the McTruth object assigned.

The McTruthMatch checks the properties of the Reconstructed particle and the McTruth. Furthermore the intermediate particles form the decay tree (built up with `Combine()`) are checked, too. The bool value being returned tells if the match was successful. Matching composites will then have a valid McTruth pointer as well.

Ralf

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Subject: Re: Update Notes  
Posted by [Simon Reiter](#) on Thu, 25 Jul 2013 21:40:40 GMT  
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Hi,

I'm trying to rewrite my macros to trunk and need some changes. But I got to a point I'm not sure about. I'm checking the mother candidate after using `McTruthMatch(RhoCandidate)`. I'm checking for primary pions directly from `pbarpsystem (MclDx=0 or PdgCode=88888)`. But I want to use the code for my dpm background too, so (since rel apr13) there is no `pdgcode` for the first particle (just the `MclDx=-1`). Therefore I used `GetMcMotherIdx()` and checked if it's lower than zero, like this:

```
int motherId = mctrk[piplus[piplus].GetMclDx()].GetMcMotherIdx();  
if(motherId<0 || mctrk[motherId].PdgCode()==88888) {
```

So my question is now: Is mother set or not for primary pions?

```
theAnalysis->FillList(mctrk, "McTruth");  
theAnalysis->FillList(piplus, "PionLoosePlus", pidalgos);
```

...

```
for (Int_t iplus=0; iplus<piplus.GetLength(); ++iplus){  
    if (theAnalysis->McTruthMatch(piplus[iplus])){
```

```
pidpiplus.Add(piplus[ipiplus]);
RhoCandidate *mother = piplus[ipiplus]->TheMother();
if(!mother || mother->PdgCode()==88888) { <-----
truepiplus.Add(piplus[ipiplus]);
} else {
falsepiplus.Add(piplus[ipiplus]);
}
}
}
```

Simon

PS: decay is: pbarpsystem ->pi+ pi- ... -> ...

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Subject: Re: Update Notes

Posted by [Klaus Götzen](#) on Fri, 26 Jul 2013 16:49:26 GMT

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Hi Simon,

the mc truth of the mother is actually set, but you accessed it incorrect in your example. You should try it with something like the following:

```
RhoCandidate *truth = piplus[ipiplus]->GetMcTruth();
RhoCandidate *mother = 0;
if (truth) mother = truth->TheMother(); // mother from truth object, not from reco candidate!
if (!mother || mother->PdgCode()==88888) {...}
```

For the time being the McTruthMatch for decay trees has a bug in the code (after restructuring of rho), which I already identified. Before checking in the fix, I'd like to first talk to Ralf (who has been in vacations this week) on Monday whether it's consistent with his redesing.

Anyway, in your case it should work like shown above I guess.

Best,  
Klaus

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Subject: Re: Update Notes

Posted by [Simon Reiter](#) on Wed, 07 Aug 2013 21:20:42 GMT

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Hi Klaus,

I tried it another time to rewrite. This time I didn't used theAnalysis->McTruthMatch(piplus[ipiplus]).

I followed your script part and wrote:

```
if (piplus[piplus]->GetMcTruth()){
  RhoCandidate* motherId = piplus[piplus]->GetMcTruth()->TheMother();
  if(motherId && motherId->PdgCode()==88888) { ... }
}
```

But I'm getting an error for TheMother:

```
#0 0x00007fa22815844e in waitpid () from /lib/x86_64-linux-gnu/libc.so.6
#1 0x00007fa2280de29e in ?? () from /lib/x86_64-linux-gnu/libc.so.6
#2 0x00007fa229031407 in TUnixSystem::StackTrace() () from
/home/panda/fairsoft/sep12build/lib/root/libCore.so.5.34
#3 0x00007fa229033ce3 in TUnixSystem::DispatchSignals(ESignals) () from
/home/panda/fairsoft/sep12build/lib/root/libCore.so.5.34
#4 <signal handler called>
#5 0x00007fa215bb0a60 in RhoCandidate::TheMother (this=0x8011) at
/home/panda/pandaroot/trunk/rho/RhoBase/RhoCandidate.h:267
#6 0x00007fa215b5c808 in G__G__RhoDict_321_0_68 (result7=0x176e9a0,
funcname=0x281 <Address 0x281 out of bounds>, libp=0x7fff6c89f730, hash=-85) at
/home/panda/pandaroot/trunkbuild/rho/G__RhoDict.cxx:7519
#7 0x00007fa22730d9ab in Cint::G__ExceptionWrapper(int (*)(G__value*, char const*,
G__param*, int), G__value*, char*, G__param*, int) () from
/home/panda/fairsoft/sep12build/lib/root/libCint.so.5.34
#8 0x00007fa2273202de in G__exec_asm () from
/home/panda/fairsoft/sep12build/lib/root/libCint.so.5.34
#9 0x00007fa2273ec4ff in G__exec_loop(char const*, char*, std::list<G__FastAllocString,
std::allocator<G__FastAllocString> > const&) [clone .constprop.69] () from
/home/panda/fairsoft/sep12build/lib/root/libCint.so.5.34
#10
....
```

Why can't PandaRoot get the mother candidate after it is checked, that the mctruth candidate is available?

This even happend not in the 1st event!

Best regards  
Simon

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Subject: Re: Update Notes  
Posted by [Klaus Götzen](#) on Thu, 08 Aug 2013 09:52:17 GMT  
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Hi Simon,

I had also some similar problem of accessing PdgCode() after 11000 events, although the pointer to the object was not 0x0. In your error dump the sequence

```
RhoCandidate::TheMother (this=0x8011)
```

looks suspicious for me, the pointer looks strange.

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) ...
```

as a work around solution. This is really dirty, but you can give it a try, whether it's just this single place, or you get more crashes like this.

Best,  
Klaus

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Subject: Re: Update Notes  
Posted by [Simon Reiter](#) on Fri, 09 Aug 2013 10:26:19 GMT  
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Hi Klaus,

I tried this and got my next error after asking for TheMother():  
#5 0x00007fe3db443a60 in RhoCandidate::TheMother (this=0x10011) at  
/home/panda/pandaroot/trunk/rho/RhoBase/RhoCandidate.h:267

I tried to avoid this with the same workaround but it didn't help. I still get the error and can't exclude this pointer..

```
RhoCandidate* mother = piplus[ipiplus]->GetMcTruth()->TheMother();  
if(mother && mother!=(RhoCandidate*)0x10011) {  
    if(motherId->PdgCode()==88888) { ... }  
}
```

I'm using 21005 for full simulation.

Best regards  
Simon

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Subject: Re: Update Notes  
Posted by [Klaus Götzen](#) on Fri, 09 Aug 2013 11:47:43 GMT  
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Hi Simon,

would it be possible, that you attach your simulation and analysis macros, so that I can try to reproduce your error?

I guess your previous attachment was for apr13.

Best,  
Klaus

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Subject: Re: Update Notes  
Posted by [Simon Reiter](#) on Fri, 09 Aug 2013 12:49:12 GMT  
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Hi,

here they are for the trunk. I got this error nearly every job (2000 events). The simulation macros are not the newest from tutorials/rho, but the log files from sim to pid didn't call any errors.

Best regards  
Simon

PS: Why is RhoCandidate\* TheMother() two times implmented, one normal and one const?

#### File Attachments

1) [macros\\_trunk.tar.gz](#), downloaded 144 times

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Subject: Re: Update Notes  
Posted by [Klaus Götzen](#) on Fri, 09 Aug 2013 14:48:29 GMT  
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Hi Simon,

just as a fast feedback, I run your chain for 500 events, and after checking for one 'strange' pointer (0x10011) it was working properly. So it doesn't seem to be a very frequent bug. However I'll take a closer look to this nasty behaviour next week.

Simon Reiter wrote on Fri, 09 August 2013 14:49PS: Why is RhoCandidate\* TheMother() two times implmented, one normal and one const?

Good question, which I would redirect to Ralf. Sometimes you need const input as parameters for other methods, and maybe this const RhoCandidate\* TheMother() is to avoid a const\_cast inbetween. But that was just guessing...

Best,  
Klaus

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Subject: Re: Update Notes  
Posted by [Stefano Spataro](#) on Fri, 09 Aug 2013 19:45:00 GMT  
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I have seen this crash after 1400 events... of course it has to be fixed somehow. Maybe some missing initialization in the constructor?

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Subject: Re: Update Notes  
Posted by [Simon Reiter](#) on Sat, 10 Aug 2013 20:50:08 GMT  
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I simulated now 200 events, 1000 events and 2000 events. In 200 and 1000 I got no errors, in 2000 events I got n error in 5 of 7, after 1400 events, after 1200 events after 1100 events, after 700 events and after 500 events.

Maybe it's because I'm not using the simulation macros out of the tutorial. I used some old ones, a bit modified. Maybe there is the problem.

Additionally I used the simulation macros of tutorials/rho and it worked for 2000 events in 10 of 10 times.

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Subject: Re: Update Notes  
Posted by [Simon Reiter](#) on Sat, 10 Aug 2013 21:07:50 GMT  
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Searched for differences between to tutorial macros and my ones:

Sim-macro: Found `fRun->SetStoreTraj(kTRUE);` // uncomment that if you want to have points for plotting but that does not seems like the reason.

pid-macro and digi-macro i just found `fRun->SetWriteRunInfoFile(kFALSE);` but this seems false anyway.

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Subject: Re: Update Notes  
Posted by [Klaus Götzen](#) on Mon, 12 Aug 2013 07:12:30 GMT  
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Hi Simon,

I think I found the bug with the broken truth pointer and fixed it. After updating PndTools/AnalysisTools you could again try a case where you got this crash and look, whether it's gone now.

Best,  
Klaus

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Subject: Re: Update Notes

Posted by [Stefano Spataro](#) on Mon, 12 Aug 2013 10:30:37 GMT

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I have rerun the analysis of my 2000 events which were crashing, and now the analysis goes smoothly.

The only "strange" thing is coming from several error messages in the fitters, which are not crashing:

Error in <Inv5x5>: matrix is singular

PndVtxPRG: COVi Inversion failed, abort fit.

Error in <PndVtxPRG::PndVtxPRG::FitNode(>): Fit failed for composite 0x7fbad4384d60. Set chisquare to 172239904.

I hope they are fine.

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Subject: Re: Update Notes

Posted by [Simon Reiter](#) on Mon, 12 Aug 2013 18:48:36 GMT

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Hi,

yes, it seems working now.

These are just some Errors by the PndVtxPRG-Fitter. I just don't know why there always another chisquare for each simulation.

Thanks

Simon

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