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Subject: [FIXED] PndAnalysis::McTruthMatch always returns false

Posted by [Simone Esch](#) on Mon, 15 Jul 2013 12:21:03 GMT

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Hi everyone!

at the moment I try to reconstruct Lambda LambdaBar events with the new Rho Classes and PndAnalysis.

There is output which I dont understand

I have done the following:

```
theAnalysis->FillList(mctrack,"McTruth","McTruth");
theAnalysis->FillList(protonplus,"ProtonLoosePlus","PidAlgoIdealCharged");
theAnalysis->FillList(pionminus,"PionLooseMinus","PidAlgoIdealCharged");
```

```
lambda.Cleanup();
lambda.Combine(protonplus, pionminus);
lambda.SetType(3122);
for (int r=0; r< lambda.GetLength();r++)
{
  fLambdaMass->Fill( lambda[r]->M() );
  std::cout << "ndaughters " << lambda[r]->Ndaughters() << std::endl;

  lambda[r]->Daughter(0)->PrintOn(std::cout);
  std::cout << std::endl;
  lambda[r]->Daughter(0)->GetMcTruth()->PrintOn(std::cout);
  std::cout << std::endl;
  std::cout << std::endl;
  theAnalysis->McTruthMatch(lambda[r],0,true)
}
```

This gives me the following output

```
ndaughters 2
uid:2 trk:1 (-0.22592,0.0670787,0.84685;1.28571) 1e 0.938272 GeV/c2 (0,0,0,4) daughters:
0() pdg: 2212 PID:0,0,0,0,1, mc truth pointer: 0x7fb13f203680
uid:5 trk:-1 (-0.225709,0.0602535,0.849309;1.28696) 1e 0.938272 GeV/c2 (0,0,0,32)
daughters: 0() pdg: 2212 PID:-999999,-999999,-999999,-999999,-999999, mc truth pointer: 0

uid:3 trk:2 (0.0527879,0.0460279,0.232573;0.280134) -1e 0.13957 GeV/c2 (0,0,0,8)
daughters: 0() pdg: -211 PID:0,0,1,0,0, mc truth pointer: 0x7fb13f2038b0
uid:6 trk:-1 (0.056507,0.047805,0.224331;0.274377) -1e 0.13957 GeV/c2 (0,0,0,64)
daughters: 0() pdg: -211 PID:-999999,-999999,-999999,-999999,-999999, mc truth pointer: 0
```

Info in <PndMcTruthMatch::MctMatch>: accepted final state by PDG code (pdg=2212)

Info in <PndMcTruthMatch::MctMatch>: rejected composite (pdg=3122) by non-matching

daughter: idau=0

My questions are now:

Why is the treknumber trk from my MCTruth Candidates always -1? Should it not be the same number as above ( This is the position in the TCA, right? )

Why are ALL my MctMatch false? Somehow this dosnt work or I am doing it wrong

External Packages: Apr13

Pandaroot: REV 20654

Best Regards

Simone

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Subject: Re: PndAnalysis::McTruthMatch always returns false

Posted by [Simone Esch](#) on Wed, 17 Jul 2013 10:08:21 GMT

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I think there are two "return" statements missing. That is the reason why my MCTruthMatch always returns false.

In PndAnalysis.h in function

```
Bool_t MctMatch(RhoCandidate& c, RhoCandList& mct, Int_t level = 2, bool verbose=false)
(Line 55)
```

and in PndAnalysis.cxx in function

```
Bool_t PndAnalysis::McTruthMatch(RhoCandidate* cand, Int_t level, bool verbose)
(Line 764)
```

Can someone check this and add this to svn?

Thanks and Best Regards

Simone

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Subject: Re: PndAnalysis::McTruthMatch always returns false

Posted by [Klaus Götzen](#) on Wed, 17 Jul 2013 20:00:16 GMT

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Hi Simone,

thanks for that hint! I think you are right, and I guess Ralf will correct it asap.

Did you modify it in your own software to check whether this indeed fixes the problem?

Best,  
Klaus

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Subject: Re: PndAnalysis::McTruthMatch always returns false  
Posted by [Simone Esch](#) on Thu, 18 Jul 2013 07:23:13 GMT  
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Hi Klaus,

yes I modified my own version.

Before McTruthMatch found no single event which reached matchlevel 2, now there are ~40% of events with matchlevel 2 for Lambdas.

Is there any other way to control if the McTruthMatch works properly? I expect to have more events with Lambdas.

Best Regards

Simone

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Subject: Re: PndAnalysis::McTruthMatch always returns false  
Posted by [Klaus Götzen](#) on Thu, 18 Jul 2013 12:49:53 GMT  
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Hi Simone,

did you make sure, that all your Lambdas decay to p pi- in your decay file?

What you can do is to make the truth match 'by hand'. Since you have the McTruth list, you should be able to find the proper indices of the p and the pi- from the true Lambda and check, whether there are particles in your reco list with corresponding McIndex.

You can then also check the properties of the true candidates, which don't get a reco match. Maybe they have very small transverse momenta or whatsoever, so that they don't get reconstructed properly.

Best regards,  
Klaus

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Subject: Re: PndAnalysis::McTruthMatch always returns false  
Posted by [Ralf Kliemt](#) on Thu, 18 Jul 2013 13:45:58 GMT

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Hi Simone.

I put up the fix.

Ralf

Edit: MC candidates now also know the mc track number.

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Subject: Re: PndAnalysis::McTruthMatch always returns false  
Posted by [Stefano Spataro](#) on Thu, 18 Jul 2013 17:09:43 GMT  
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Good,  
can Simone give the final OK, so that I can put [fixed] in the thread?

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Subject: Re: PndAnalysis::McTruthMatch always returns false  
Posted by [Simone Esch](#) on Fri, 19 Jul 2013 04:24:49 GMT  
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Everthing fine for me now

Thank you all!

Simone

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Subject: Re: PndAnalysis::McTruthMatch always returns false  
Posted by [Stefano Spataro](#) on Fri, 19 Jul 2013 07:41:26 GMT  
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Good,  
one problem less

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