
Subject: MC truth (cont.)

Posted by [Karin Schönning](#) on Tue, 25 Mar 2014 11:10:53 GMT

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Hi again,

I asked previously about MC truth PID, then we thought the issue was solved but now it appears that it is not solved after all. Using MC truth PID and matching with a MC truth mother in the following way:

```
int ipiprec =0;
int ipipmoth=0;
mcidpip.SetType(211);
for (k=0; k<mcidpip.GetLength(); ++k) {
    if ( theAnalysis->McTruthMatch(mcidpip[k]) ) {
        RhoCandidate *piptr=mcidpip[k]->GetMcTruth();
        if(piptr && piptr->PdgCode()==211){
            ipiprec++;
            RhoCandidate *mother = 0;
            mother = piptr->TheMother();
            if (mother && mother->PdgCode()==411)
            {
                ipipmoth++;
            }
        }
    }
}
```

for $\Psi'(3770) \rightarrow D+D-, D+ \rightarrow K-\pi+\pi+$ and $D- \rightarrow K+\pi-\pi-$ gives in about 12% of the events, cases with more than 2 $\pi+$ or $\pi-$ or more than 1 $K+$ or $K-$ in the final state. I have the same problem in the January 2014 release as in the trunk version of pandaroot.

Did anyone else still have this problem?

Best regards,
/Karin

Subject: Re: MC truth (cont.)

Posted by [StefanoSpataro](#) on Tue, 25 Mar 2014 11:26:04 GMT

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Are these primary pions or this number includes also secondaries?

Subject: Re: MC truth (cont.)

Posted by [Karin Schönning](#) on Tue, 25 Mar 2014 15:02:28 GMT

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I thought that this

```
mother = piptr->TheMother();  
if (mother && mother->PdgCode() == 411)  
was supposed to make sure that the pi+ comes from a D+ decay?
```

Subject: Re: MC truth (cont.)
Posted by [Klaus Götzen](#) on Tue, 25 Mar 2014 16:43:40 GMT
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Hi Karin,

I think simply counting the number of pi+ is not sufficient. My last observation was btw, that the MC truth doublers are still present, but reduced since the track doublers have been removed.

However, checking how often more than one reco track points to the same MC truth object (i.e. GetMcTruth() delivers the same pointer) would be a more useful number.

Best,
Klaus

Subject: Re: MC truth (cont.)
Posted by [Karin Schönning](#) on Wed, 26 Mar 2014 16:28:48 GMT
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There seems to be both reco doublets and different reconstructed tracks that point to the same MC truth object.

Subject: Re: MC truth (cont.)
Posted by [Karin Schönning](#) on Thu, 27 Mar 2014 10:21:33 GMT
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There are no reco doublets (checked my code again and made a correction) but there in about 19% of the Psi(3770)->D+D-->K-2pi+K+2pi- events, it happens at least once that two different reco tracks point to the same MC truth track.
About 1-2% of the kaon MC truth tracks have more than one reco track pointing to it, and for about 4-5% of the pion tracks.
