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Subject: [FIXED] MC truth

Posted by [Karin Schönning](#) on Thu, 06 Feb 2014 13:18:01 GMT

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Hej pandas,

my student and I are trying to simulate  $\Psi(3770) \rightarrow D^+ D^- \rightarrow \pi^+ \pi^+ K^- \pi^- \pi^- K^+$ . We would like to check each reconstructed  $\pi^+$  candidate against the mc truth and see if its corresponding MC truth track has a  $D^+$  as its mother.

I tried this:

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

cout<<" piprec: "<<ipiprec<<" , "<<" pipmoth: "<<ipipmoth<<endl;
```

From running 10 events I get the following output:

```
piprec: 2 , pipmoth: 2
piprec: 3 , pipmoth: 1
piprec: 2 , pipmoth: 2
piprec: 4 , pipmoth: 3
piprec: 0 , pipmoth: 0
piprec: 2 , pipmoth: 2
piprec: 4 , pipmoth: 4
piprec: 3 , pipmoth: 3
piprec: 1 , pipmoth: 0
```

meaning there are several events with more than 2  $\pi^+$  candidates coming from a  $D^+$  decay. Does anybody know why this happens/what I am doing wrong?

Cheers,  
/Karin

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