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Subject: vertex fitting

Posted by [Alexandros](#) on Mon, 08 Sep 2014 11:26:46 GMT

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Hi all,

Is there something wrong with the code below?? Because I get a segmentation break with these lines and without everything works perfectly..

The problem seems to be in the red line...

Any ideas??

```
        // store the 4-vector of the truth matched candidate (or a dummy, if not matched
to keep ntuple consistent)
```

```
RhoCandidate *truth = d0[j]->GetMcTruth();
```

```
TLorentzVector lv;
```

```
if (truth) lv = truth->P4();
```

```
qa.qaP4("trd0", lv, nd0);
```

```
PndKinVtxFitter *vtxfitter=new PndKinVtxFitter(truth); // instantiate a vertex fitter
vtxfitter->Fit();
```

```
RhoCandidate *d0fitvtx = truth->GetFit(); // access the fitted cand
```

```
Float_t chi2_vtx = vtxfitter->GetChi2(); // access chi2 of fit
```

```
Float_t prob_vtx = vtxfitter->GetProb(); // access probability of fit
```

```
TVector3 d0Vtx = d0fitvtx->Pos(); // and the decay vertex position
```

```
nd0->Column("vtxprob", (Float_t) prob_vtx);
```

```
nd0->Column("vtxchi2", (Float_t) chi2_vtx);
```

```
nd0->Column("vtxposx", (Float_t) d0Vtx.X());
```

```
nd0->Column("vtxposy", (Float_t) d0Vtx.Y());
```

```
nd0->Column("vtxposz", (Float_t) d0Vtx.Z());
```

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Subject: Re: vertex fitting

Posted by [Ralf Kliemt](#) on Mon, 08 Sep 2014 12:07:54 GMT

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Hi Alexandros,

You try to fit a MC-Truth candidate. I have two objections against that: Firstly it does not have a `PidCandidate` object and not all features, esp. Vertexing, are available. Secondly it is the truth and should not be processed by a fitter, because vertex and fourmomenta are true and the truest truth.

Try some reconstructed candidate.

Cheers

Ralf

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Subject: Re: vertex fitting  
Posted by [StefanoSpataro](#) on Mon, 08 Sep 2014 12:21:15 GMT  
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I suppose a MC truth has no covariance matrix, then it cannot be fitted.

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Subject: Re: vertex fitting  
Posted by [Alexandros](#) on Wed, 10 Sep 2014 09:38:32 GMT  
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Hi again,  
I have one more question..  
I am trying to calculate ctau for D0 meson in my analysis(123micrometers)  
From the mc the calculation is correct(125micrometers).  
From the vertex information I get 185micrometers..  
I have looked several times my code and I could not find a single mistake..  
Is there a chance, since we are talking about micrometers that the resolution is not good or there is something else wrong??  
I attach my code and my results to get an idea..  
Thanks!!

#### File Attachments

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- 1) [Analysis.C](#), downloaded 314 times
  - 2) [Draw.C](#), downloaded 296 times
  - 3) [distance\\_from\\_IP.pdf](#), downloaded 344 times
  - 4) [betaVSenergy.pdf](#), downloaded 285 times
  - 5) [ctau\\_and\\_beta\\*gamma\\_mc.pdf](#), downloaded 294 times
  - 6) [ctau\\_and\\_beta\\*gamma\\_data.pdf](#), downloaded 293 times
- 

Subject: Re: vertex fitting  
Posted by [StefanoSpataro](#) on Wed, 10 Sep 2014 09:57:30 GMT  
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Why you are not fitting in the whole range?

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Subject: Re: vertex fitting  
Posted by [Alexandros](#) on Wed, 10 Sep 2014 10:07:10 GMT  
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It doesn't change anything..  
I still have 50-60 micrometers difference

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Subject: Re: vertex fitting  
Posted by [StefanoSpataro](#) on Wed, 10 Sep 2014 10:08:49 GMT  
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The mine was a question.  
However, to be correct, the reco plot should be corrected for efficiency.

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Subject: Re: vertex fitting  
Posted by [Alexandros](#) on Wed, 10 Sep 2014 10:51:53 GMT  
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I am sorry I didnt get you..  
what do you mean by that??

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Subject: Re: vertex fitting  
Posted by [StefanoSpataro](#) on Wed, 10 Sep 2014 12:59:22 GMT  
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If you have an efficiency high close to the IP and smaller far, then your fit will be biased. Then, in general, one uses simulation to evaluate the efficiency as a function of the position, and after you use this function to correct your experimental data.  
The fact that you have a mean life different from the MC tells you that the reconstruction efficiency is not flat as a function of the distance. But I would not be scared by this.

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Subject: Re: vertex fitting  
Posted by [Alexandros](#) on Wed, 10 Sep 2014 13:15:05 GMT  
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ok then, i will try to find a way of doing what you propose..  
thanks a lot!!!

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