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Subject: PndKinVtxFitter. Does FitAll() work?

Posted by [Dima Melnychuk](#) on Fri, 28 Mar 2014 11:10:15 GMT

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Hi,

I try at the moment to make a comparison of full vs fast simulation for  $\eta_c \rightarrow \phi \phi \rightarrow K^+ K^- K^+ K^-$  decay.

I did this analysis for central tracker TDR and I am updating the analysis macro.

I have a problem with vertex fitter PndKinVtxFitter if I want to access fitted daughter particles after the fit.

The code

```
PndKinVtxFitter vtxfitter(etac_vtx[j]);  
vtxfitter.Fit();
```

works, but daughters are unfitted:

```
RhoCandidate *etacfit=etac_vtx[j]->GetFit();  
k1 = etacfit->Daughter(0);
```

I tried

```
k1 = etacfit->Daughter(0)->GetFit();
```

and it returns 0.

But the code

```
PndKinVtxFitter vtxfitter(etac_vtx[j]);  
vtxfitter.FitAll();
```

which should work according to documentation

( [https://panda-wiki.gsi.de/foswiki/bin/view/Computing/PandaRootAnalysisJully13#A\\_5.1\\_PndKinVtxFitter\\_45\\_Vertex\\_and\\_kinematic\\_fitting](https://panda-wiki.gsi.de/foswiki/bin/view/Computing/PandaRootAnalysisJully13#A_5.1_PndKinVtxFitter_45_Vertex_and_kinematic_fitting))

produce the

```
chi2_vtx=-9999 (chi2_vtx=vtxfitter.GetChi2()),
```

whereas with `vtxfitter.Fit()` `chi2` were reasonable values.

So did anybody (means Ralf or Klaus) check `PndKinVtxFitter::FitAll()`?

Dima

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Subject: Re: PndKinVtxFitter. Does FitAll() work?

Posted by [Ralf Kliemt](#) on Fri, 28 Mar 2014 12:25:41 GMT

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Hello Dima,

It is supposed to work. Please send me a data sample and your analysis macro. I'll check from there.

Cheers  
Ralf

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Subject: Re: PndKinVtxFitter. Does FitAll() work?  
Posted by [Dima Melnychuk](#) on Fri, 28 Mar 2014 12:41:42 GMT  
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Hi Ralf,

I put data sample (100 events) and analysis macro (run\_ana\_etac.C) at gsi network under /d/panda02/dmelnych/etac\_data.tar.gz

Dima

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Subject: Re: PndKinVtxFitter. Does FitAll() work?  
Posted by [Ralf Kliemt](#) on Fri, 28 Mar 2014 14:02:15 GMT  
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Hi Dima,

I found some issues.

First: I fixed the FitAll() to also fit the head of the decay tree. It was a "logic bug", just update (at least rho).

Second: In your special case Fit() would have sufficed as you only have one decay node in your etac\_vtx candidate list.

Third: When selecting your best kaons you tried to access the Fit() of a fitted kaon (etacfit has the fitted daughters), giving you the null pointer.

Fourth: After fixing these things I got more errors in the block which was never reached before. I leave that to you to fix.

Cheers  
Ralf

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Subject: Re: PndKinVtxFitter. Does FitAll() work?  
Posted by [Dima Melnychuk](#) on Fri, 28 Mar 2014 14:20:34 GMT  
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Many thanks, Ralf.

So for certainty I would like to clarify how to access fitted daughters.

```
k1 = etacfit->Daughter(0);
```

or

```
k1 = etacfit->Daughter(0)->GetFit();
```

Or more specific if I do:

```
PndKinVtxFitter vtxfitter(etac_vtx[j]);  
vtxfitter.Fit();  
RhoCandidate *etacfit=etac_vtx[j]->GetFit();  
k1 = etacfit->Daughter(0);
```

k1 is fitted or not?

Dima

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Subject: Re: PndKinVtxFitter. Does FitAll() work?  
Posted by [Ralf Kliemt](#) on Fri, 28 Mar 2014 14:29:49 GMT  
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Dima Melnychuk wrote on Fri, 28 March 2014 15:20

```
PndKinVtxFitter vtxfitter(etac_vtx[j]);  
vtxfitter.Fit();  
RhoCandidate *etacfit=etac_vtx[j]->GetFit();  
k1 = etacfit->Daughter(0);
```

k1 is fitted or not?

k1 is fitted.

To understand this concept: The decay tree is copied internally. The fitted tree can be accessed via one call of GetFit(). Then you navigate in the fitted tree via Mother/Daughters relations.

Cheers  
Ralf

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