
Subject: new features in GENFIT

Posted by [Anonymous Poster](#) on Wed, 24 Jun 2009 10:13:38 GMT

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Dear colleagues,

there are some new features in GENFIT:

The adapter from GENFIT to PndTrack is done. It is in trackrep for the moment, but it will move to another location eventually. Tracking experts: Please check my code. I have no possibility to test it, so a thorough check by you is very important. Tracks are now saved only in FairTrackParP format, like discussed in Torino.

I added an outlier rejection mechanism to GENFIT. You can activate it by giving a >0. cut value to void Kalman::setOutlierCut(double d). It is given in units of chi²/NDF (in some sense in units of sigma) for single hits.

If a hit is rejected this fact will be documented in the Track's bookkeeping mechanism. Please see the Track source files for that.

In the 1. forth&back fitting pass, the rejection is deactivated. For every following pass, the rejection is calculated newly and the bookkeeping is cleared. That means that only the hits rejected in the last fitting pass are not used for the final track parameters.

Cheers, Christian

Subject: Re: new features in GENFIT

Posted by [Stefano Spataro](#) on Wed, 24 Jun 2009 10:44:18 GMT

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Hi,

I am currently upgrading lhtrack in order to use PndTrack and PndTrackCand. It is not so clear to me why the constructor of PndTrack needs FairTrackParP instead of the common FairTrackPar. In the case of helix tracks, it could be more convenient to use FairTrackParH, then I have not understood this change.

And another question: genfit needs a starting "Track" and spits out a "Track". If I check PndGenfitAdapters I can see the following functions:

```
PndTrackCand* GenfitTrackCand2PndTrackCand(const TrackCand*);  
TrackCand* PndTrackCand2GenfitTrackCand(PndTrackCand*);  
PndTrack* GenfitTrack2PndTrack(const Track*);
```

I can see the converter PndTrack -> Track is missing, which should create the initial "Track" for genfit. It is planned to create such kind of adapter, or should the "developer" of its kalman task take care about the proper "Track" construction?

Subject: Re: new features in GENFIT

Posted by [Anonymous Poster](#) on Wed, 24 Jun 2009 13:01:48 GMT

Hi Stefano,

thanks for your questions.

1) About not using FairTrackH in PndTrack:

You can refer back to the old forum entries about the problem, why I could not use the base class. It was discussed with Ralf/Tobias/Mohammad in Torino, that I believe that we do not need to save FairTrackParH in PndTrack. The reason is that hits in any detectors are always measured in FairTrackParP parametrization. So, if from LHE track you get something else, please use the conversion tools to convert to FairTrackParH.

2) We could make a PndTrack -> Track adapter. Could you maybe do that? Some help is very welcome and the more people get used to the stuff the better. If you have specific questions about it, I will be happy to help.

3) I want to solve the problem of all these several Kalman tasks everybody is writing. I want to have only one central task for that. I am thinking about how to do that in the moment...

Cheers, Christian

Cheers, Christian

Subject: Re: new features in GENFIT

Posted by [StefanoSpataro](#) on Mon, 29 Jun 2009 11:07:16 GMT

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I am writing my PndTrack as genfit Track, before running the kalmanTask.

When I have to set the GeaneTrackRep, I have to set the detector plane as U and V.

When I have to take this detector plane from the PndTrack, in particular from FairTrackParP, what should I use? I can see many things inside:

GetIVer
GetJVer
GetKVer
GetV
GetW
GetTV
GetTW

but I am not so sure on what to use exactly as U and V (I have tried JVer and KVer but then I have a "Assertion `_u!=_v' failed.".

Which is the right element to use?

Thanks in advance

Subject: Re: new features in GENFIT

Posted by [Anonymous Poster](#) on Mon, 29 Jun 2009 11:17:36 GMT

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Hi,

I am not an expert on the FairTrackPar stuff. Can somebody from Pavia or GSI help?

Cheers, Christian

Subject: Re: new features in GENFIT

Posted by [Lia Lavezzi](#) on Mon, 29 Jun 2009 13:09:38 GMT

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Hi,

actually GetJVer/GetKVer should be the right choice

The plane in GEANE is spanned by v , w vectors in the SD frame (u, v, w) ... I don't understand at first glance why you obtain such an error... how often does it happen? Always or just in some events?

Ciao,
Lia.

P.S. concerning the other functions:

GetV --> returns the v coordinate of the point (corresponding to the coordinate on the x-axis in the plane)

GetW --> returns the w coordinate of the point (corresponding to the coordinate on the y-axis in the plane)

GetTV --> returns tv , i.e. the derivative v'

GetTW --> returns tw , i.e. the derivative w'

...they are the track parameters in SD representation q/p , v' , w' , v , w .

Subject: Re: new features in GENFIT

Posted by [Stefano Spataro](#) on Mon, 29 Jun 2009 13:20:35 GMT

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Hi,

it seems that IVer JVer and ZVer are $(0, 0, 0)$, maybe in the constructor they are not filled properly.

I have bypassed this error just setting by hands $(1,0,0)$ and $(0,1,0)$.

Subject: Re: new features in GENFIT

Posted by [Lia Lavezzi](#) on Mon, 29 Jun 2009 13:35:57 GMT

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I just had a look to the FairTrackParP constructors, but they all imply the setting of the plane, and this requires the setting of fiver, fjver, fkver... which constructor are you using exactly?

Ciao,
Lia.

Subject: Re: new features in GENFIT

Posted by [Anonymous Poster](#) on Mon, 29 Jun 2009 15:04:18 GMT

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Hi Lia,

this is probably going wrong in trackrep/PndAdapters.* . Please see there which constructor call is make:

```
FairTrackParP first(firstState[3][0],firstState[4][0],firstState[1][0],first
State[2][0],firstState[0][0],firstCova,firstPlane.getO(),firstPlane.getU (),first
Plane.getV());
```

CU, Christian

Subject: Re: new features in GENFIT

Posted by [Lia Lavezzi](#) on Mon, 29 Jun 2009 15:44:56 GMT

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Ok, thanks...

By just looking at the code it seems that everything is correct, so I need some more time to check what is happening, to do some debug, but unfortunately (I' m sorry) I don' t think I will be able to do it this week... please give me some time, I' ll check it next week, as soon as possible...

Ciao,
Lia.
