Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Sverre Dørheim on Tue, 02 Aug 2011 18:49:03 GMT
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Hello Stefano, Lia

To study the problem a bit closer I took a look at the output of the fits in the TPC+MVD+GEM before the conversion to PndTracks.

In this plot one can see the start-position of all tracks in the XY-plane, and one can clearly see some starting points which are way off. This is of course ALL tracks, also the tracks where the fits went wrong.
Looking at only the tracks with
track.getCardinalRep().getStatusFlag()==0, where the fit converged I get something like this, where all start values are within a reasonable range.

The rough binning is to make the outlyers a bit more visible.

This led me to investigate if this flag is checked at any time later in the analysis chain and as far as I can see this information is lost when converting the GFTrack to a PndTrack, where the PndTrack gets a new flag which is:
-1 if NDF=0 or Genfit threw an exeption when calculated the momentum at the first and last detector plane
1 otherwhise

I did the same plot for all GFTracks where NDF!=0 resulting in:

Where clearly can see that the worst outliers are gone.
Since only this flag is awailable atthe PndPidTrackInfo level I implemented this check before the extrapolation:

```
Bool_t rc=false;
if(track->GetFlag()==1){
   rc =  fPro0->Propagate(helix, fRes, fPidHyp*charge);
}
```

This was then tested on 1000 events, whith no crash in the PID-macr. This is probably the quickest fix as one only needs to rerun the PID-Macro.

Best regards
Sverre

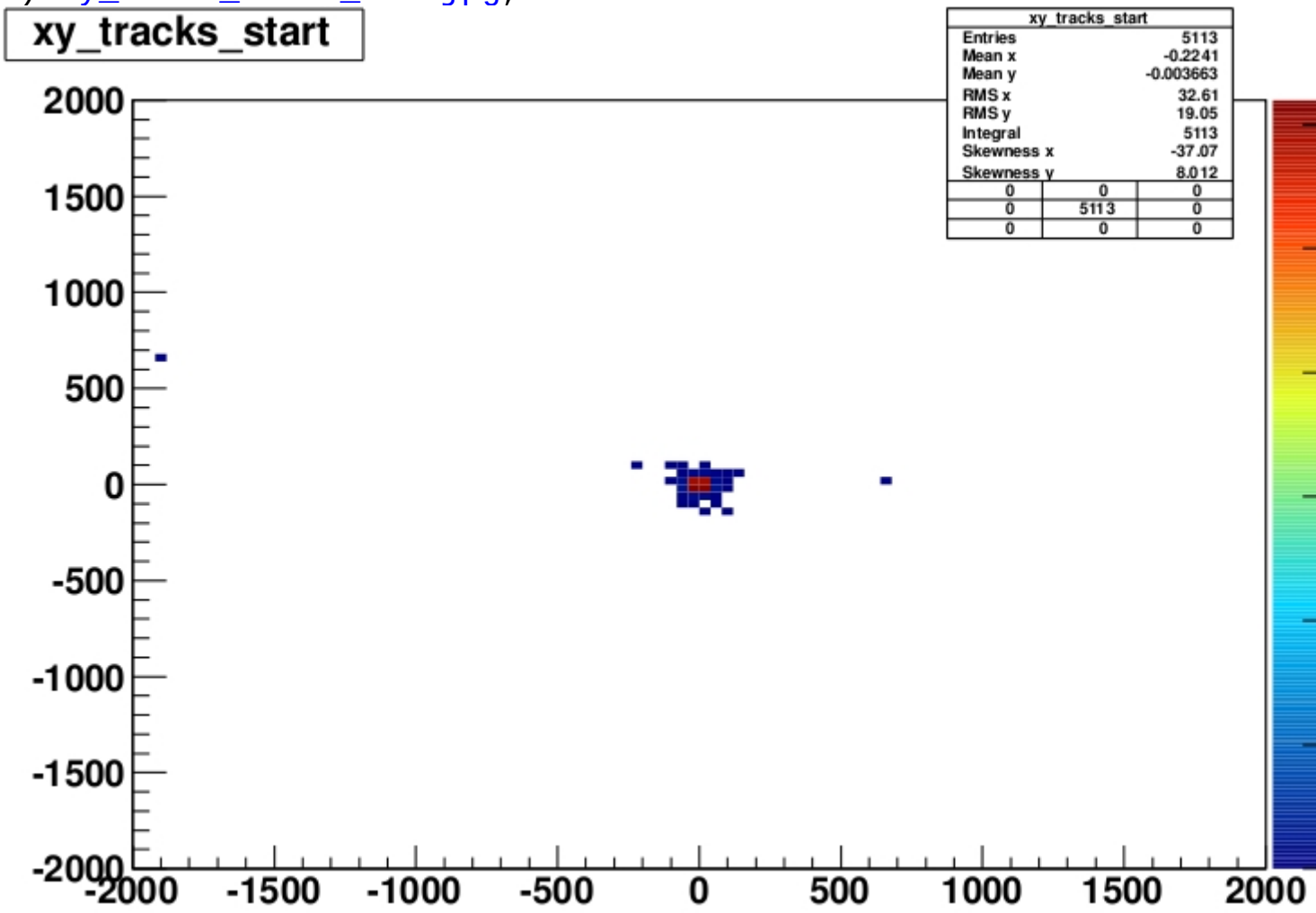
Ps:
Looking at the statistics in the 3 plots:
All GFTracks:5113
statusflag 0:4132
ndf!=0 :4912

A lot more tracks get lost when cutting away events with statusflag!=0(ie something whent wrong) than just cutting away events with ndf!=0.

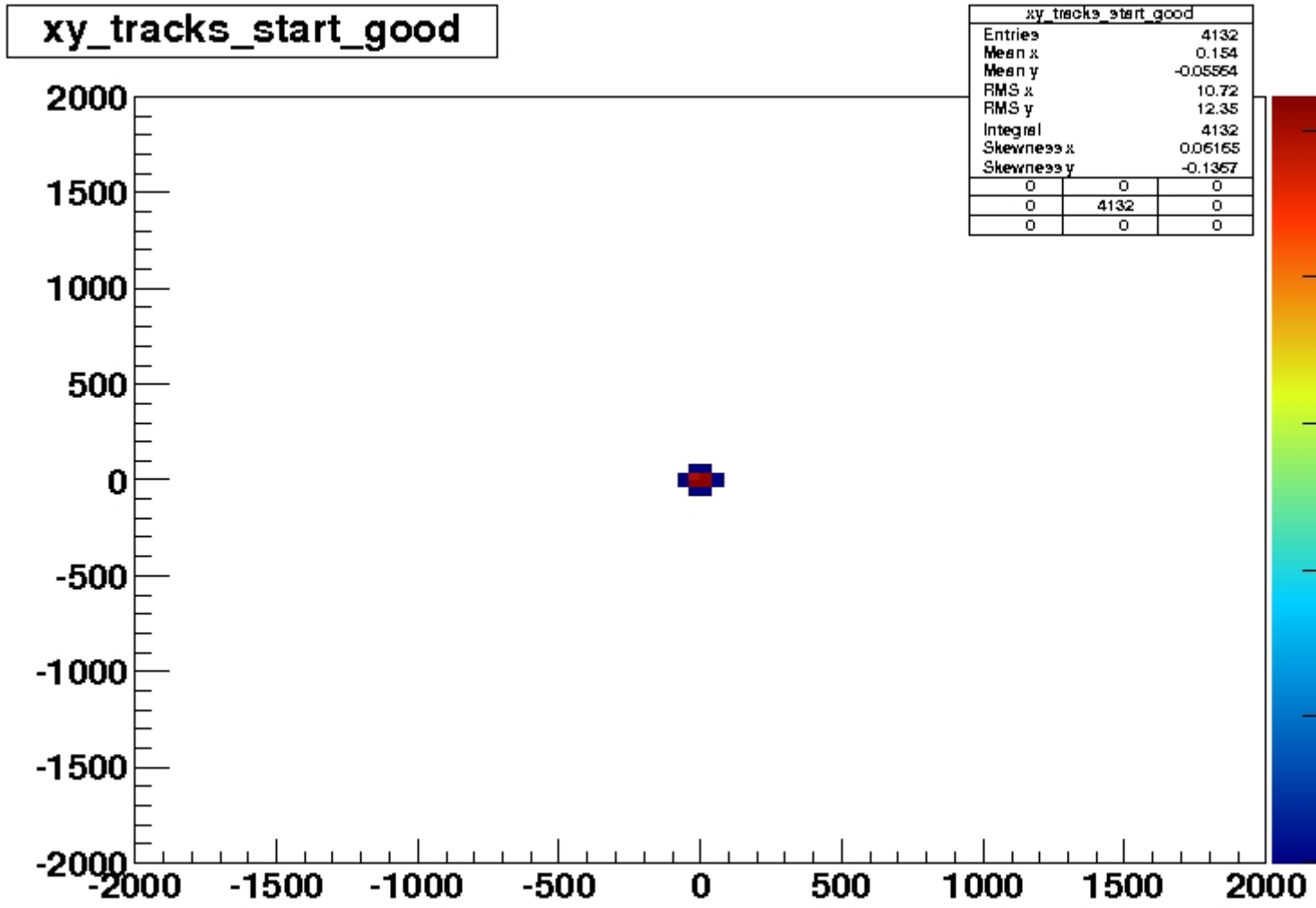
The effect of this should also be tested.

File Attachments

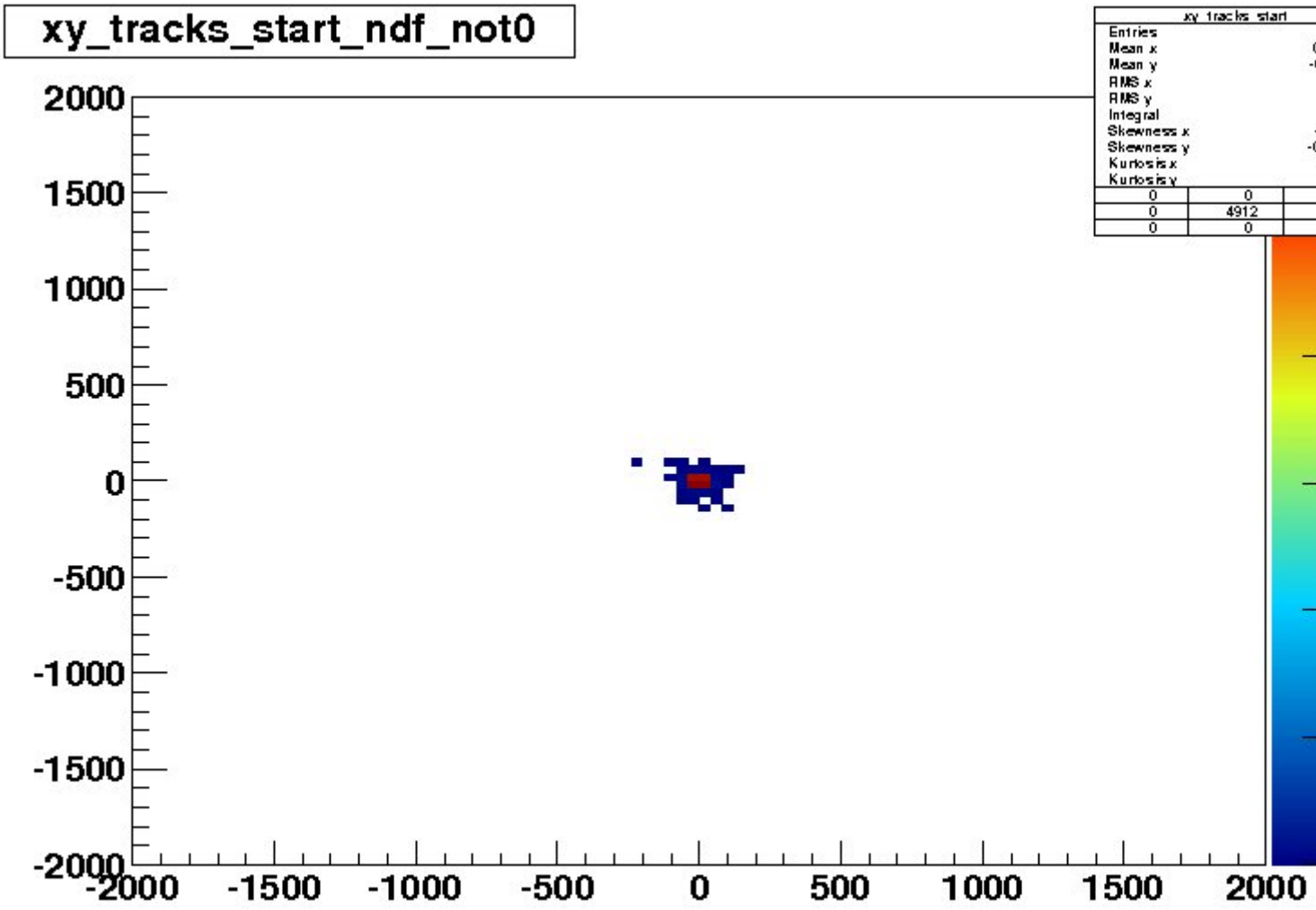
1) xy_track_start_all.jpg, downloaded 509 times



2) xy_track_start_good.jpg, downloaded 565 times



3) xy_track_start_ndf_not0.jpg, downloaded 542 times


xy_tracks_start_ndf_not0
xy_tracks_start
Entries
Mean x
Mean y
RMS x
RMS y
Integral
Skewness x
Skewness y
Kurtosis x
Kurtosis y
0
0
0
4912
0
0
2000
1500
1000
500
0
-500
-1000
-1500
-2000
-2000
-1500
-1000
-500
0
500
1000
1500
2000