Subject: GFTrack NDF == 0
Posted by StefanoSpataro on Tue, 20 Apr 2010 15:11:00 GMT

Hi,
I have modified the adapter and the fit class in order to use a "flag" convention
PndTrack::GetFlag() :

flag   1 - good track
flag   0 - (default value from constructor)
flag -1 - NDF==0
flag -2 - failure in PndGenfitAdapter
flag -10 - pz < 1e-9 (no propagation possible)

If flag = -10 or -2, the results of the fit is the "prefit" track. If flag = -1, then the result is the already fitted track.

I have simulated 500 muons at 1 GeV, tpc+mvd from 20° to 120°.
This is the flag distribution:

Many tracksat 1, but tracks also at -1 and -2.

Here I plot the flag distribution versus number of hits belonging to the track:

As you can see, -1 (ndf==0) tracks have a high number of hits, they seem "good" tracks, and not just bad tracklets.

I plot here the momentum distribution of the "prefit" value for tracks with flag==-1:

You can see these tracks have a correct momentum, and even theta seems reasonable. This means that, maybe, the ndf==0 is not connected to wrong initial parameters given by lhe.

A systematic study about the source of this problem should be done, and also the "volunteer" should be found. Maybe they are simply bad tracks, but it could be also possible that we are losing good tracks simply fitting them.
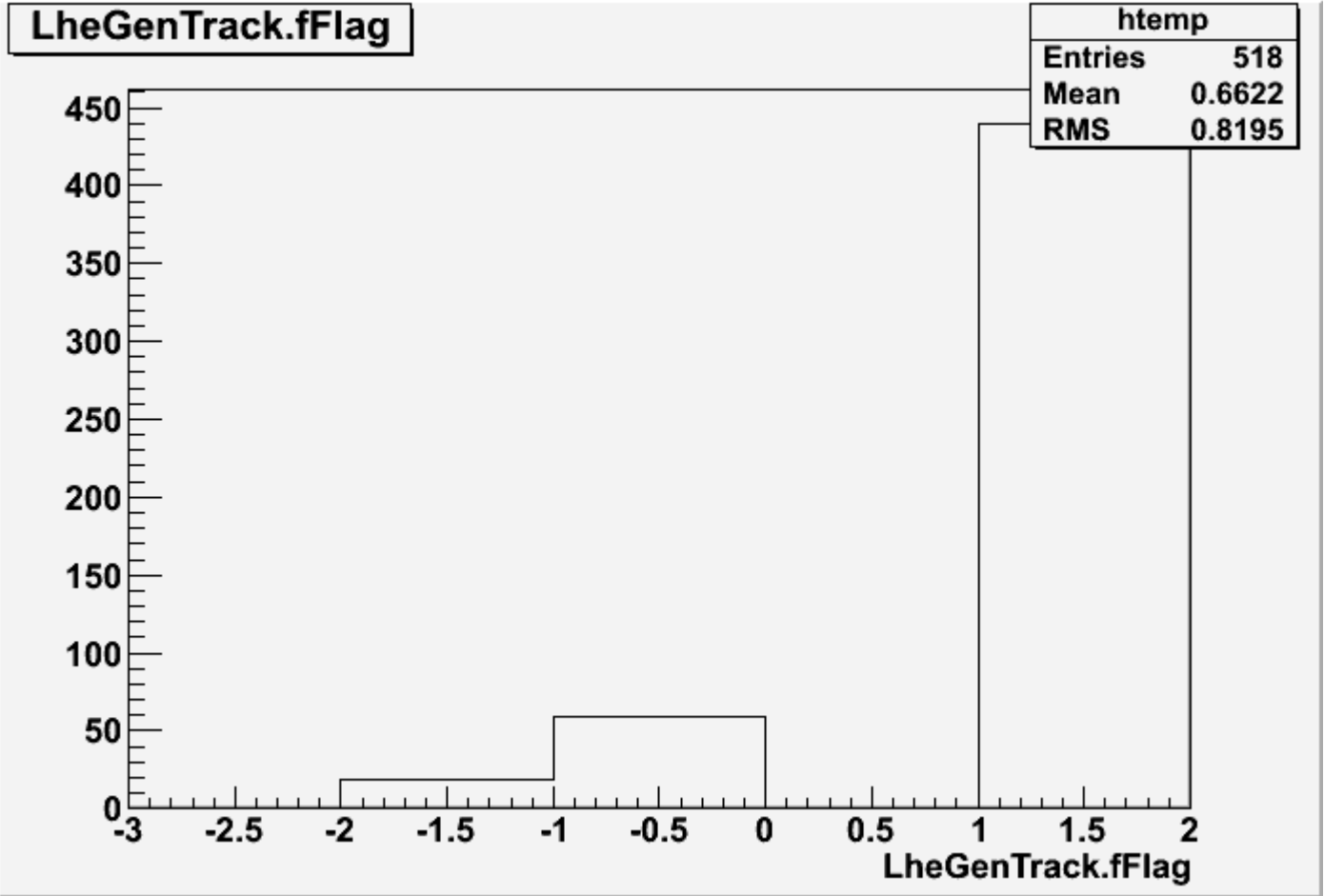
it is also not clear to me why I have -2 tracks, why the adapter is failing, but this is a second order problem, I think.
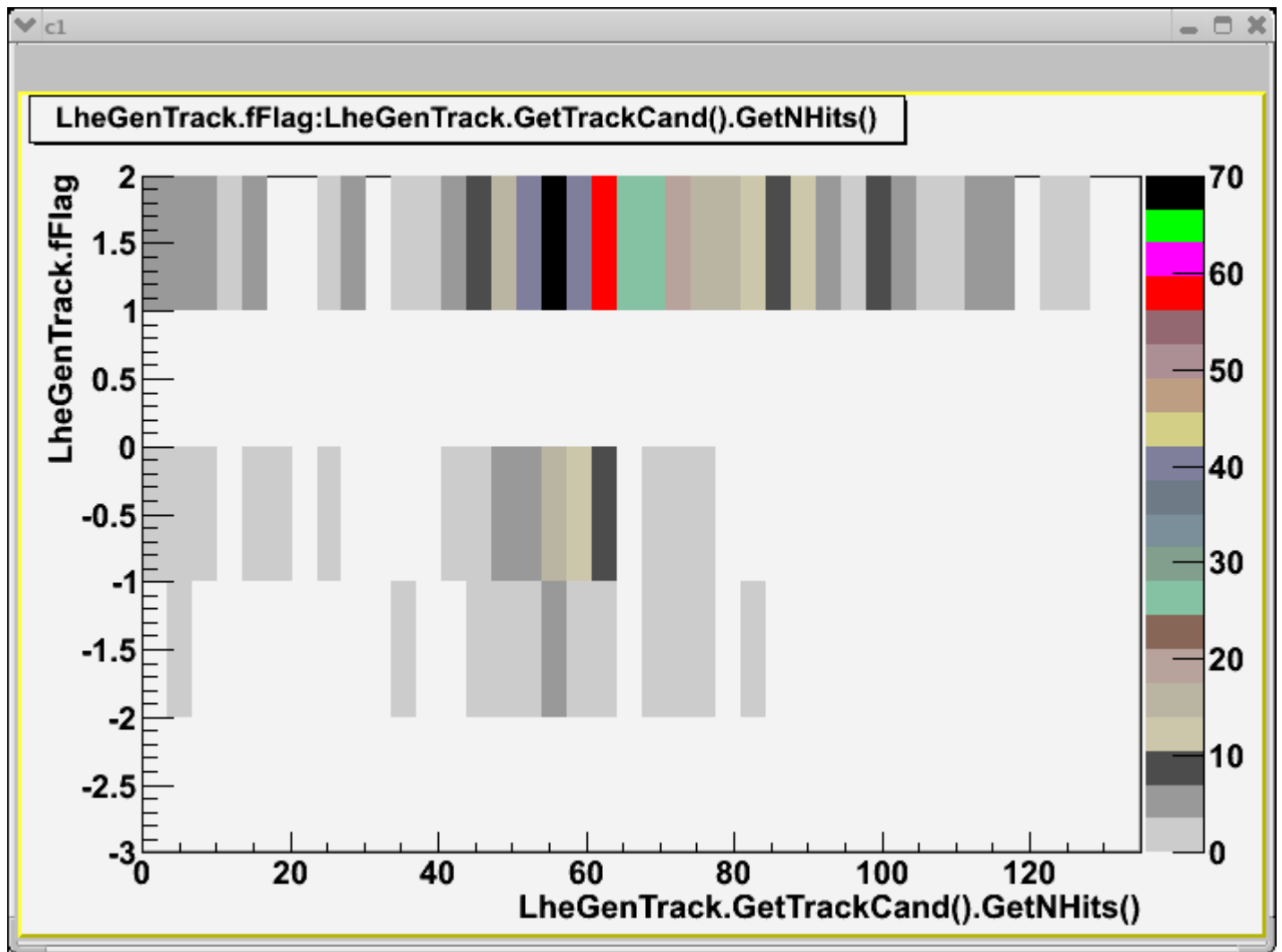
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File Attachments
1) gen_flag.gif, downloaded 696 times
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2) gen_flaghits.gif, downloaded 711 times

3) lhe_flag-1_prem.gif, downloaded 712 times

LheTrack.GetParamFirst().GetMomentum().Mag()[LheGenTrack.fRefIndex] {LheGenTrack.fFlag==-1}

htemp	
Entries	59
Mean	1.019
RMS	0.4238

LheTrack.GetParamFirst().GetMomentum().Mag()[LheGenTrack.fRefIndex]