Subject: source of low efficiency of eta_c reconstruction with TPC
Posted by Dima Melnychuk on Sun, 17 Jul 2011 23:21:57 GMT
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Dear colleagues,

It seems that I've found the source of low efficiency of eta_c reconstruction with TPC, however I have no idea how to correct it.

It looks like that tasks PndTpcMVDCorrelatorTask and PndTpcGEMCorrelatorTask in tpc reconstruction macro with kalman refit after each step decrease a number of reconstructed tracks that significantly decrease eta_c reconstruction efficiency.

So with the full chain in tpc reconstruction macro eta_c efficiency is 5.8 %. If I leave only PndTpcRiemannTrackingTask and one KalmanTask and use obtained tracks for eta_c reconstruction I have efficiency 19.3%.

With STT for the same data sample I have 28% efficiency, which is still higher but the difference is not so significant.

And here some more details how tracks are lost. To convert from GFTrack to PndTrack, track->getNDF() is checked and if it equal 0, the -1 flag is set and those tracks are rejected. This NDF=0 means that genfit somewhow failed but I do not know more details.

In data set of 2000 events with 11824 tracks reconstructed by PndTpcRiemannTrackingTask after first kalman there are 9856 tracks with NDF!=0, after second step (i.e. after correlation with MVD) 9675 tracks and after third kalman (correlation with GEM) 9504 tracks are left.

I suppose it would make sense if the tracks are spoiled in correlation (i.e. failed genfit) to keep original tracks, without correlated hits in MVD and GEM. Hovewer I have no idea at the moment how to implement it.

Dima