Subject: eta_c reconstruction efficiency
Posted by Dima Melnychuk on Thu, 06 Oct 2011 10:01:38 GMT
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Hi,

I tried to localize the source of the problem with eta_c reconstruction efficiency and compared simulation with trunk version of pandaroot and then replaced only PndSttMvdTracking.cxx, PndSttMvdTracking.h to the version corresponding to july11 release, i.e PndSttMvdTracking.cxx (rev.12530) PndSttMvdTracking.h (rev. 12558).

Running simulation with 3000 events with trunk version I have efficiency 14.1%.

Mass distributions without any cuts:

and final plot after vertex fit

For the version with replaced PndSttMvdTracking efficiency is 26.2%
and mass distributions without any cuts:

and final mass plots after vertex fit:

Here the reconstruction efficiency is a factor 2 better.

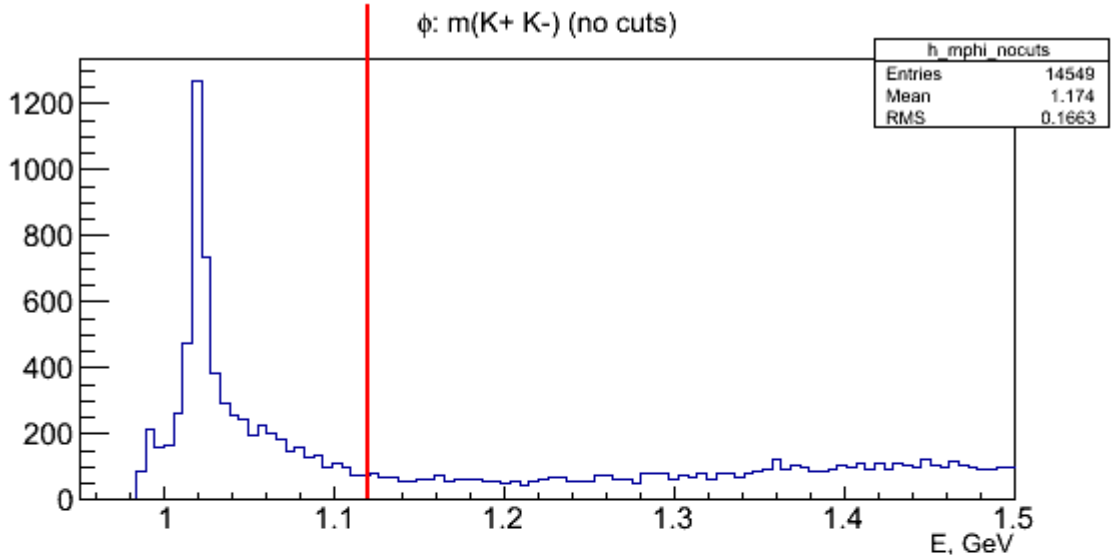
Reconstructed events are the same for both cases. Final eta_c mass distribution has double peak structure but it appears for both cases and I suppose it's a question of statistics.

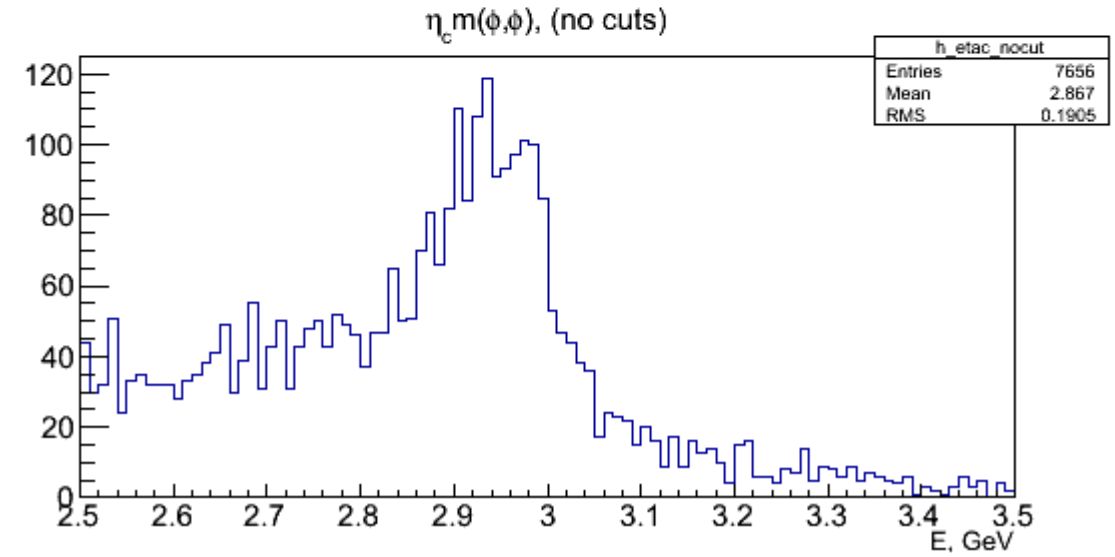
So as a conclusion the hole problem is related to PndSttMvdTracking class only. I will try to localize the problem further but the code is too big and I suppose that Gianluigi will be better at it than me.

Dima

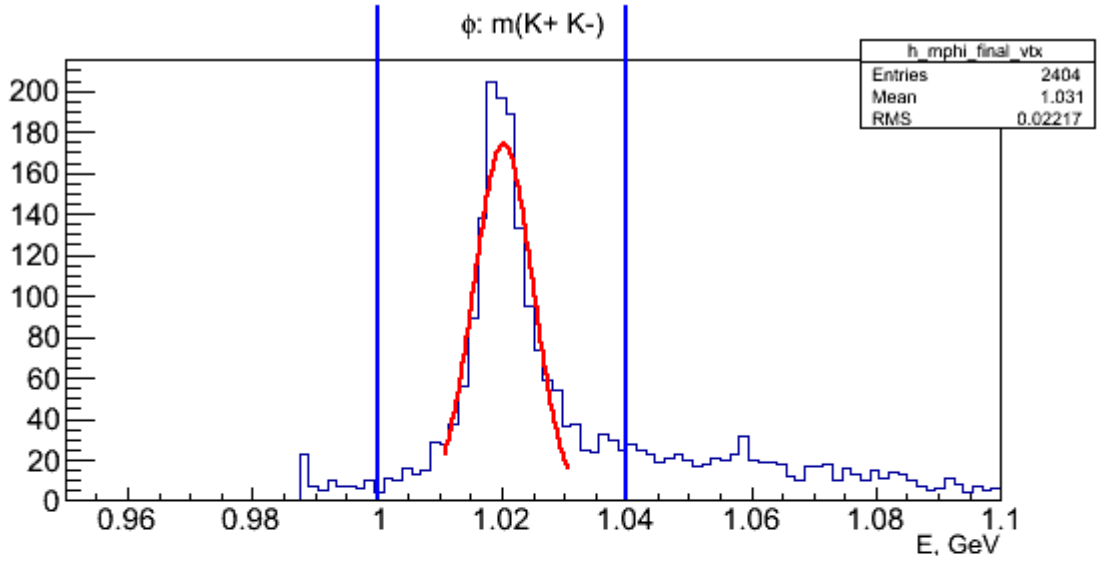
File Attachments

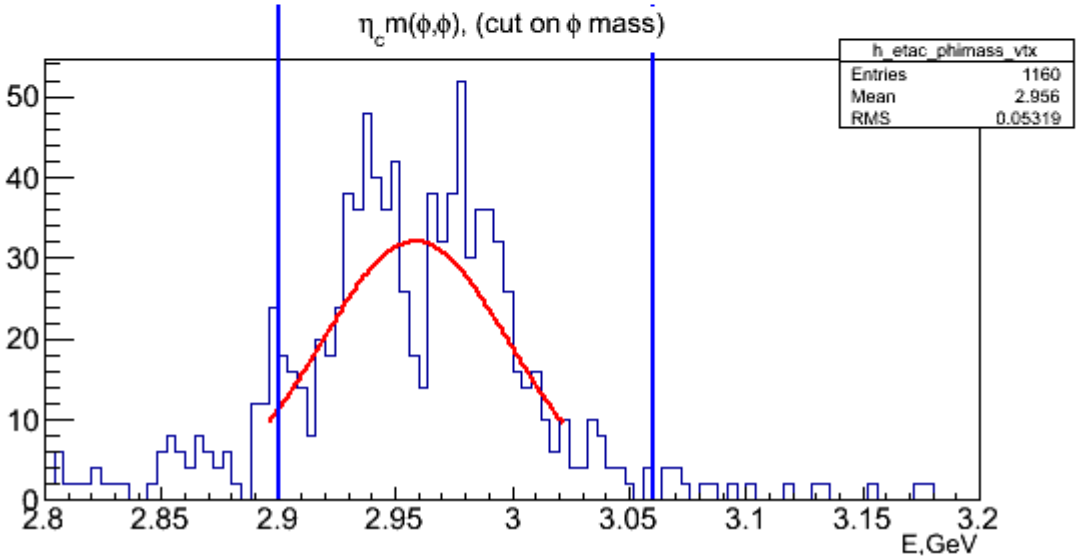
1) mass_nocuts_trunk.png, downloaded 1046 times



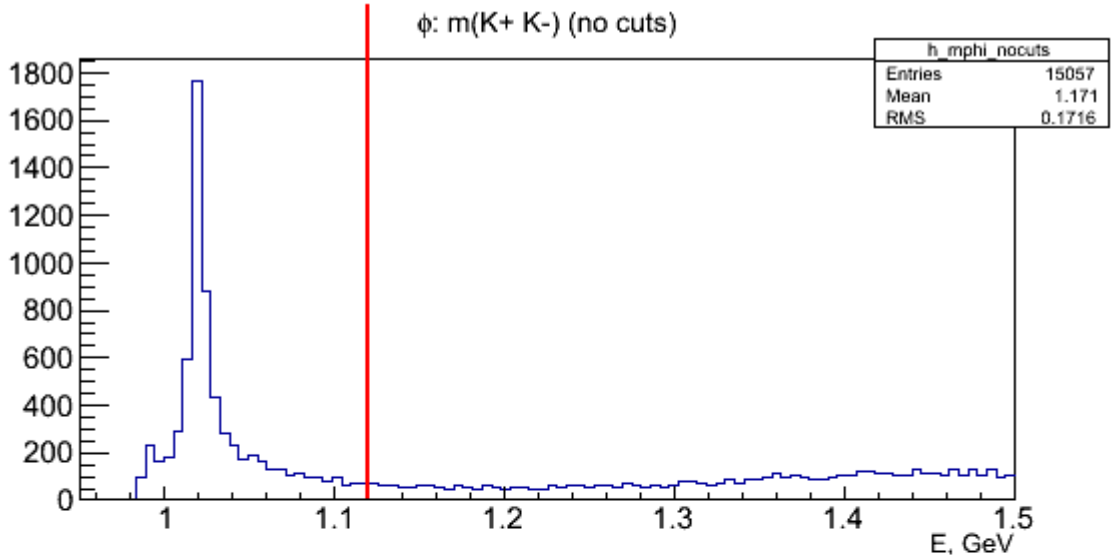


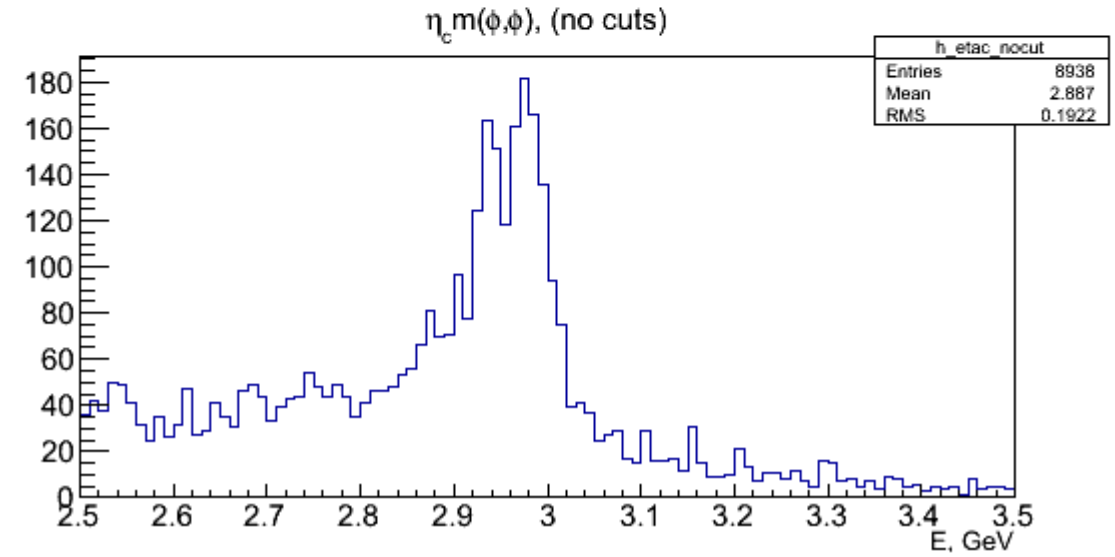
2) mass_final_trunk.png, downloaded 1072 times



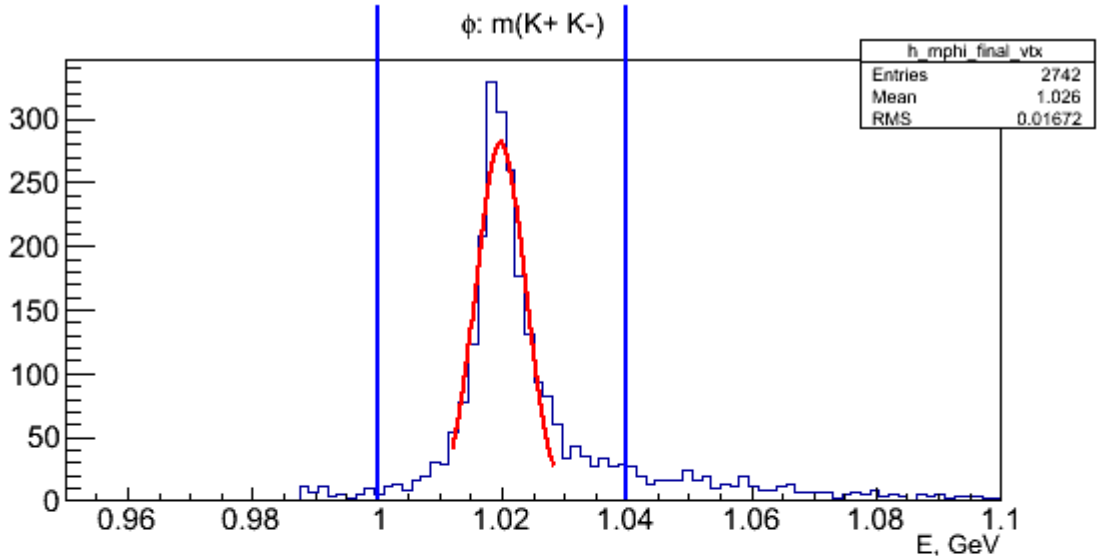


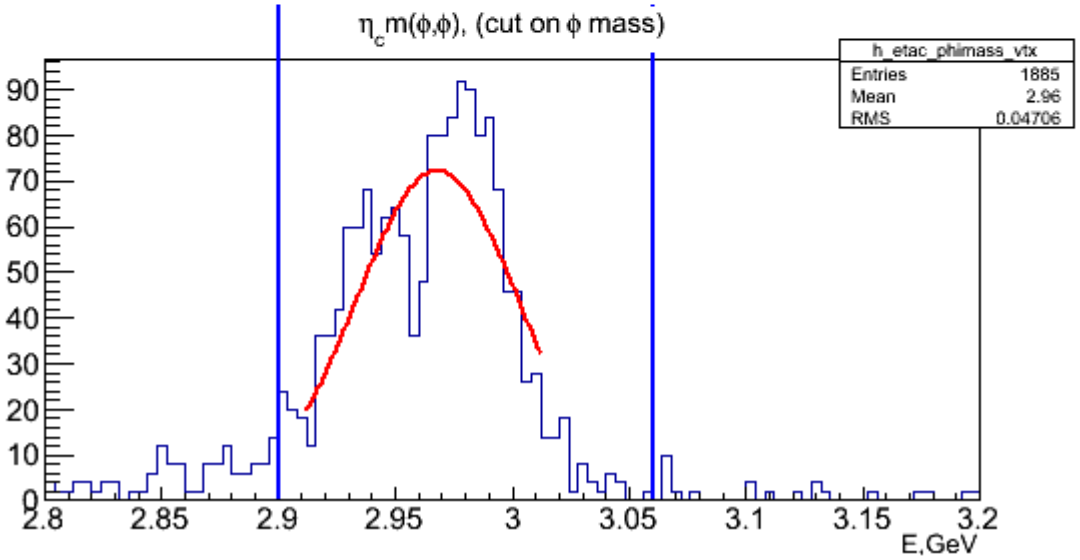
3) mass_nocuts_july11.png, downloaded 1080 times





4) mass_final_july11.png, downloaded 1093 times


ϕ: m(K+ K-)
h_mphi_final_vtx
Entries 2742
Mean 1.026
RMS 0.01672
300
250
200
150
100
50
0
0.96
0.98
1
1.02
1.04
1.06
1.08
1.1
E, GeV


η_c m(ϕ,ϕ), (cut on ϕ mass)
h_etac_phimass_vtx
Entries 1885
Mean 2.96
RMS 0.04706
90
80
70
60
50
40
30
20
10
0
2.8
2.85
2.9
2.95
3
3.05
3.1
3.15
3.2
E,GeV