Subject: eta_c results with event mixing
Posted by Dima Melnychuk on Fri, 09 Dec 2011 12:37:57 GMT
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Hi,

With available "mixed data" 391 subjobs by 250 events, i.e. around 100 k I have the following results for eta_c reconstruction.

Starting with multiplicity of reconstructed tracks, it's obviously higher than for signal only.

Invariant mass for eta_c and phi without cuts.

Here eta_c peak seats on large combinatorial background.

After all the cuts mass looks like:

Efficiency of eta_c reconstruction 11.6% vs 27.3% for signal only and 19.1% for signal plus clean-up. Resolution sigma(eta_c)=18.6 MeV and sigma(phi)=4.20 MeV is close to the "non-mixed" case.

Another question arises how results look like without MC PID and how PID is relevant for this study.

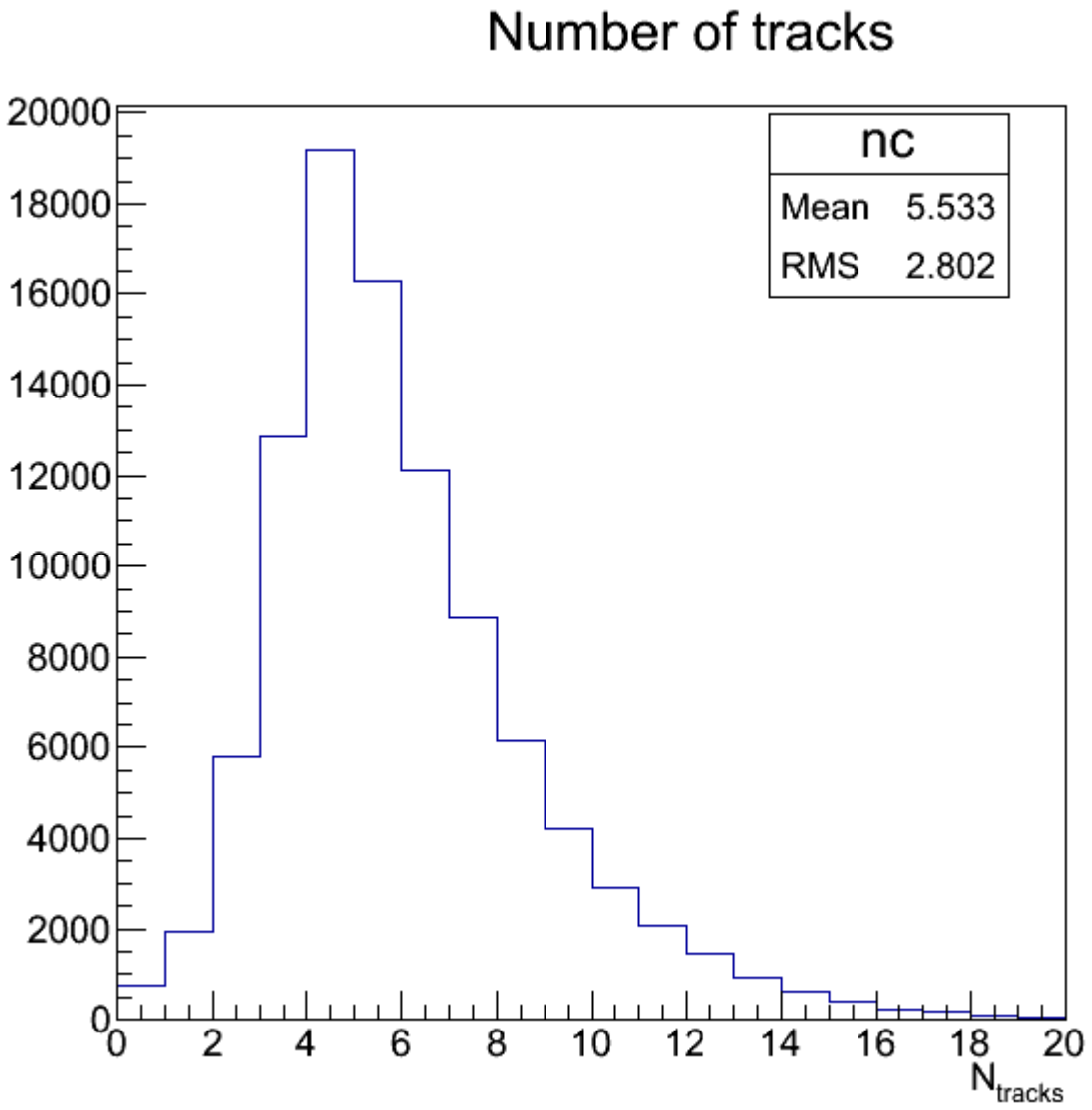
Final invariant mass plot:

Here phi mass distribution has much higher tails from combinatoric and eta_c reconstruction efficiency is 9.6% vs 11.6% applying MC PID.

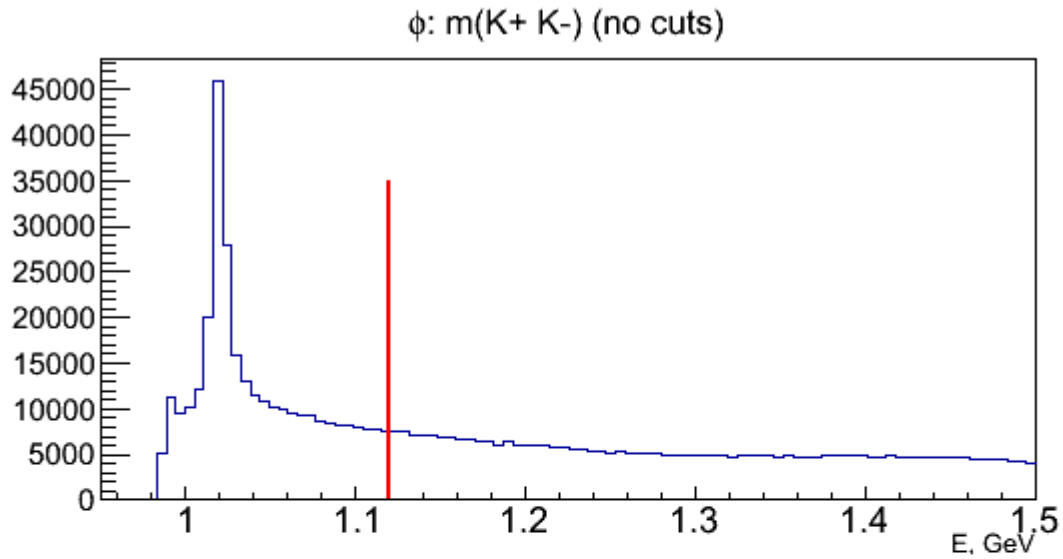
Dima

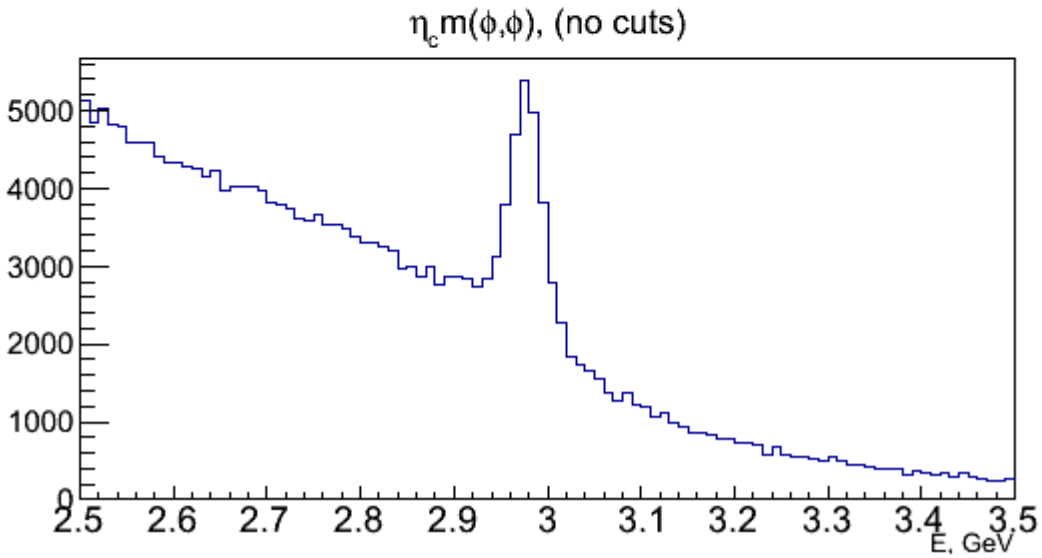
File Attachments

1) etac_ncharged_stt_mix.png, downloaded 912 times

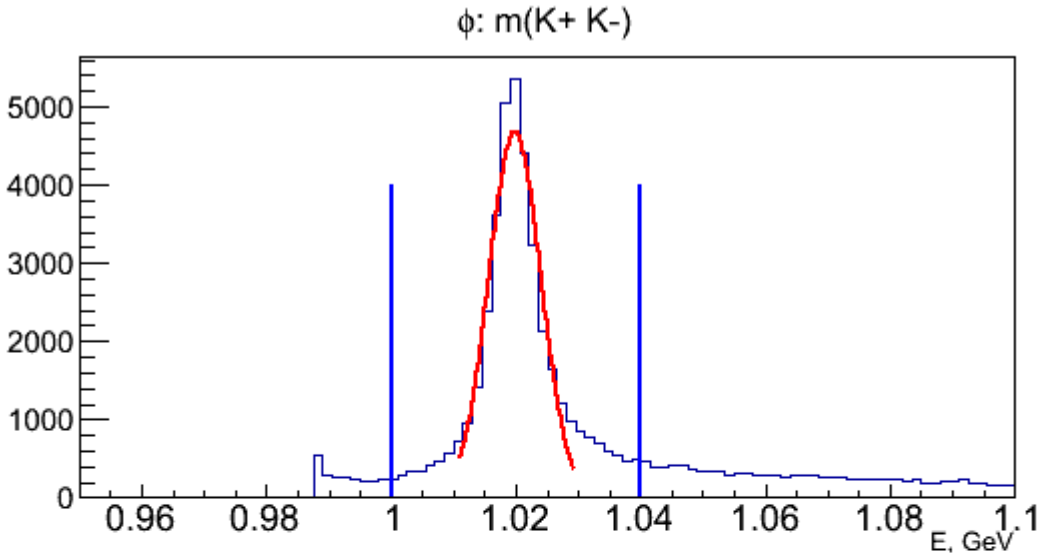


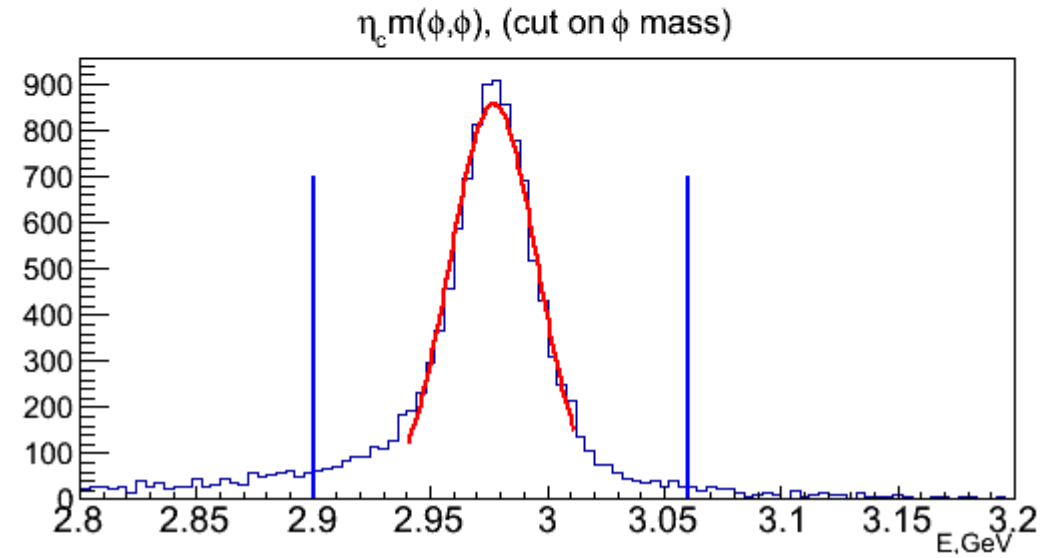
2) etac_m_nocuts_stt_mix.png, downloaded 901 times



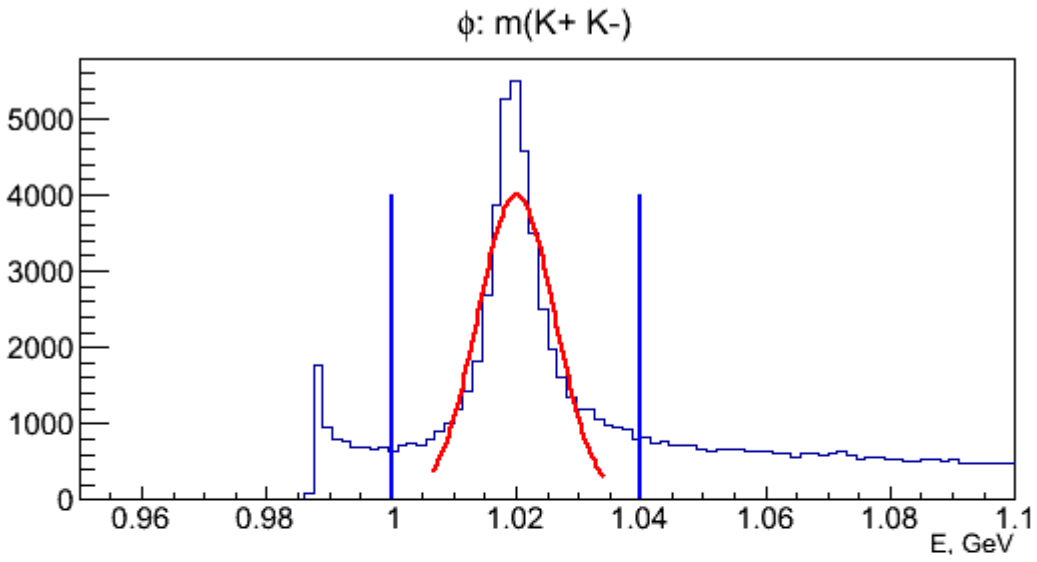


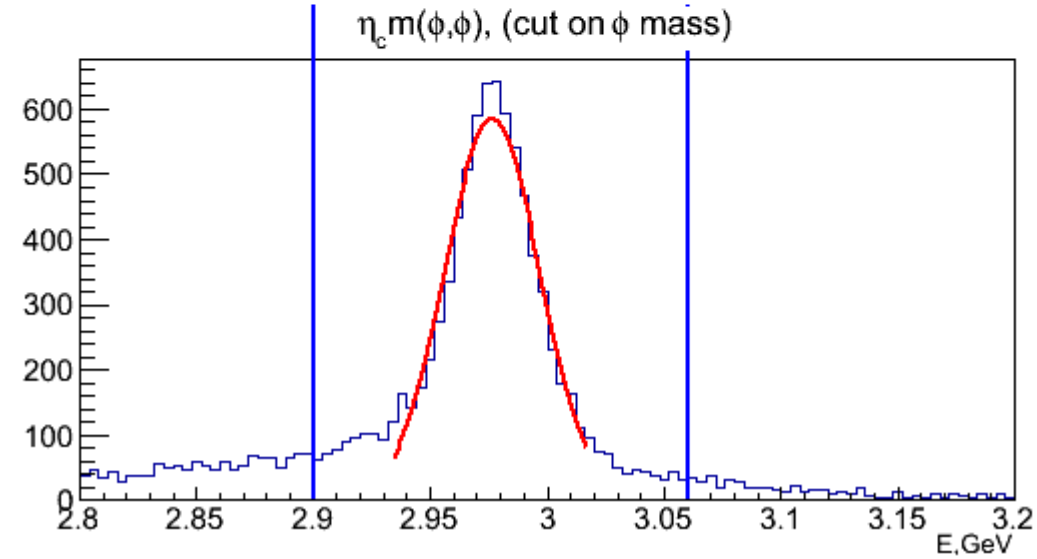
3) etac_m_final_vtx_stt_mix.png, downloaded 940 times





4) etac_m_final_vtx_stt_mix_nopid.png, downloaded 1056 times


ϕ: m(K+ K-)
5000
4000
3000
2000
1000
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)
600
500
400
300
200
100
0
2.8
2.85
2.9
2.95
3
3.05
3.1
3.15
3.2
E,GeV