
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 $\sigma(\text{eta}_c)=18.6$ MeV and $\sigma(\text{phi})=4.20$ 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:

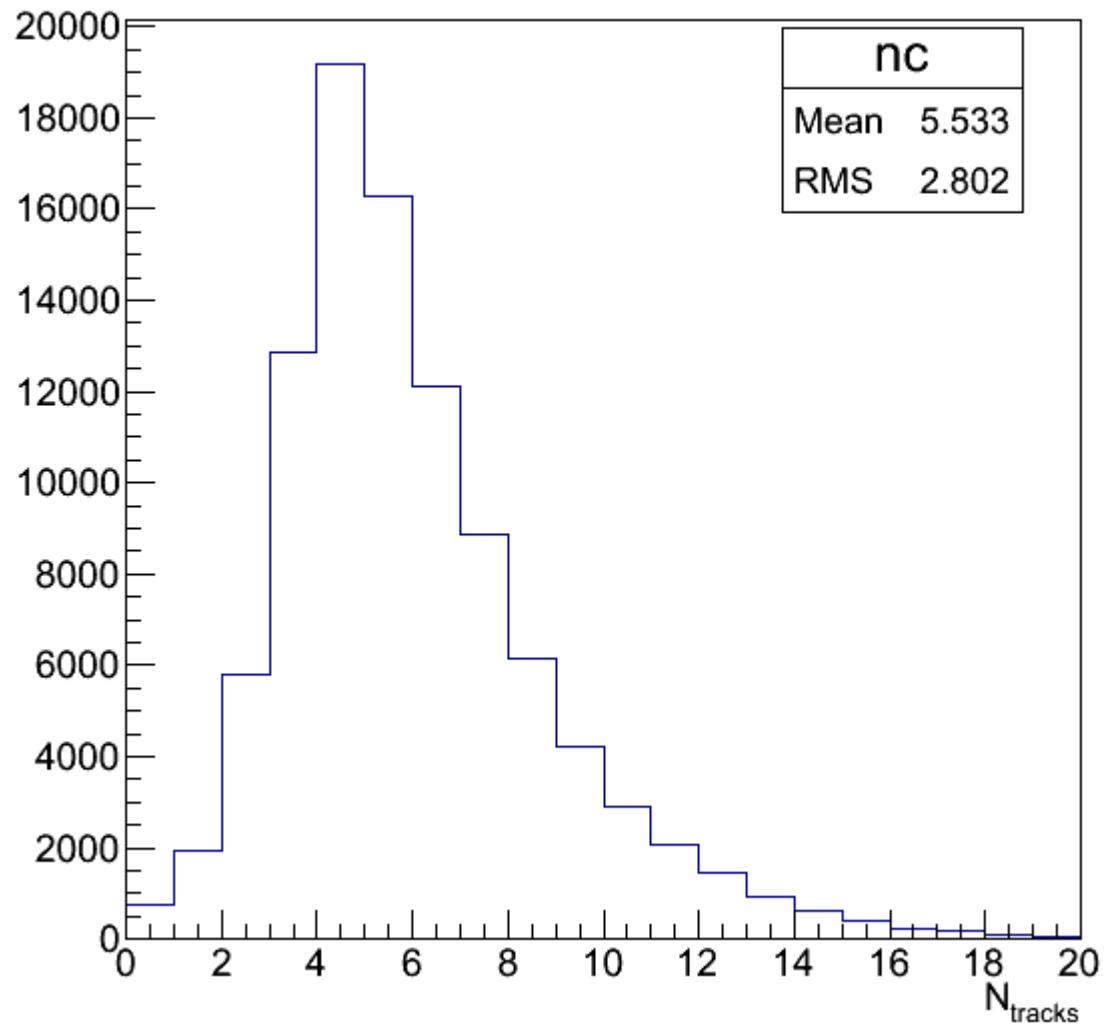
Here phi mass distribution has much higher tails from combinatoric and eta_c reconstruction efficiency is 9.6% vs 11.6% applying MC PID.

Dima

File Attachments

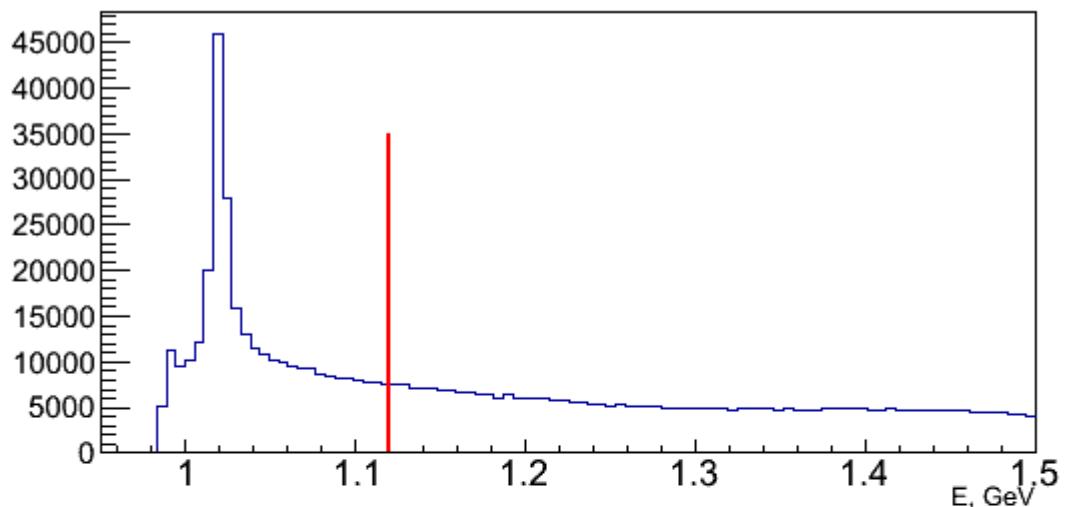
1) [etac_ncharged_stt_mix.png](#), downloaded 1198 times

Number of tracks

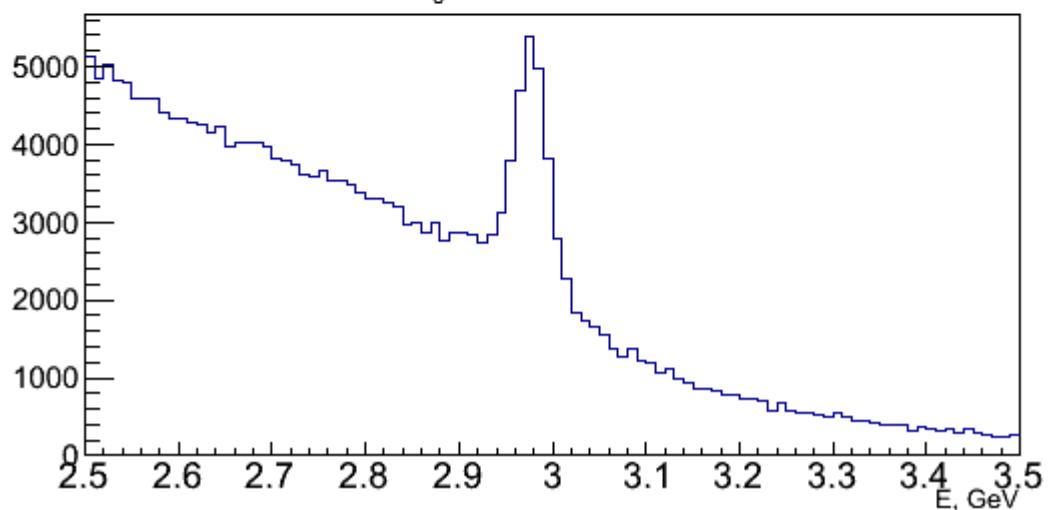


2) [etac_m_nocuts_stt_mix.png](#), downloaded 1188 times

$\phi: m(K^+ K^-)$ (no cuts)

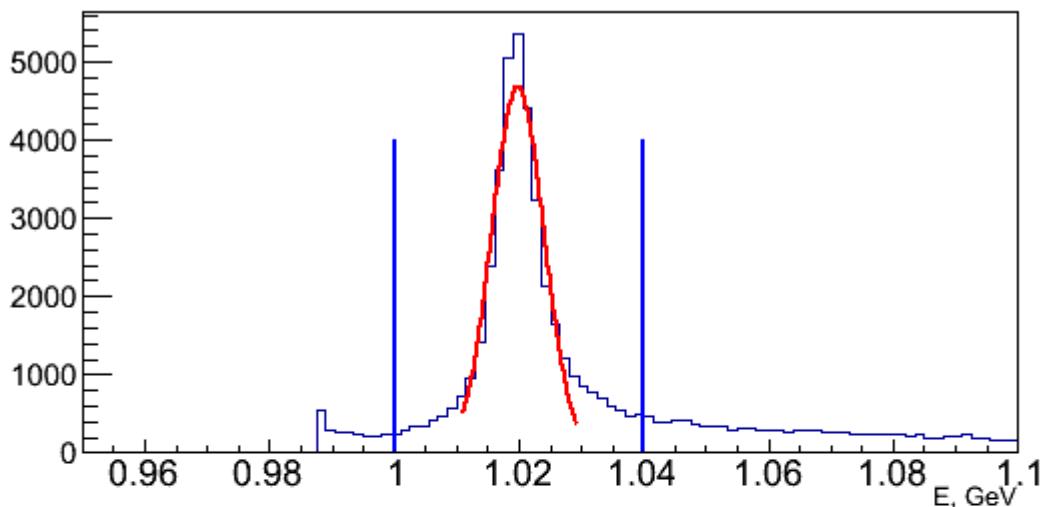


$\eta_c m(\phi, \phi)$, (no cuts)

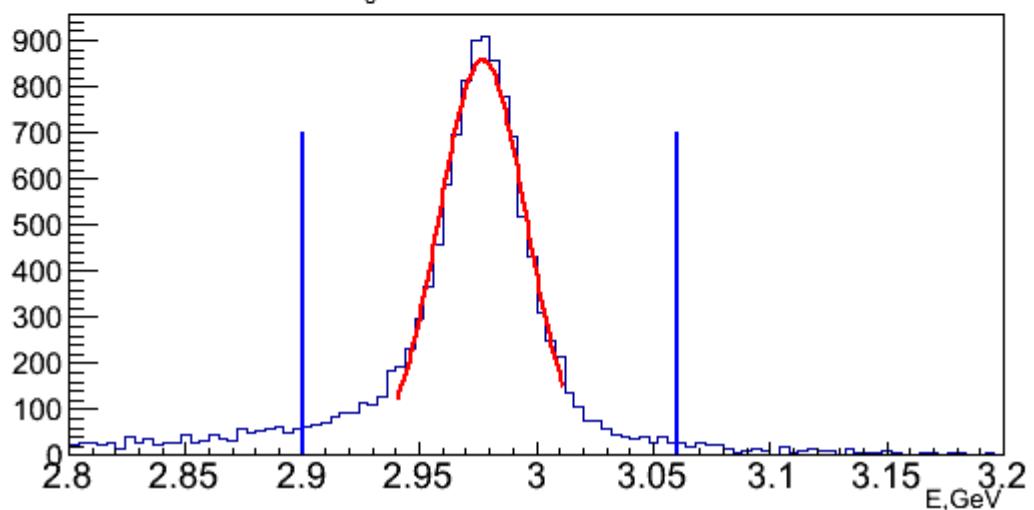


3) [etac_m_final vtx_stt_mix.png](#), downloaded 1218 times

$\phi: m(K^+ K^-)$

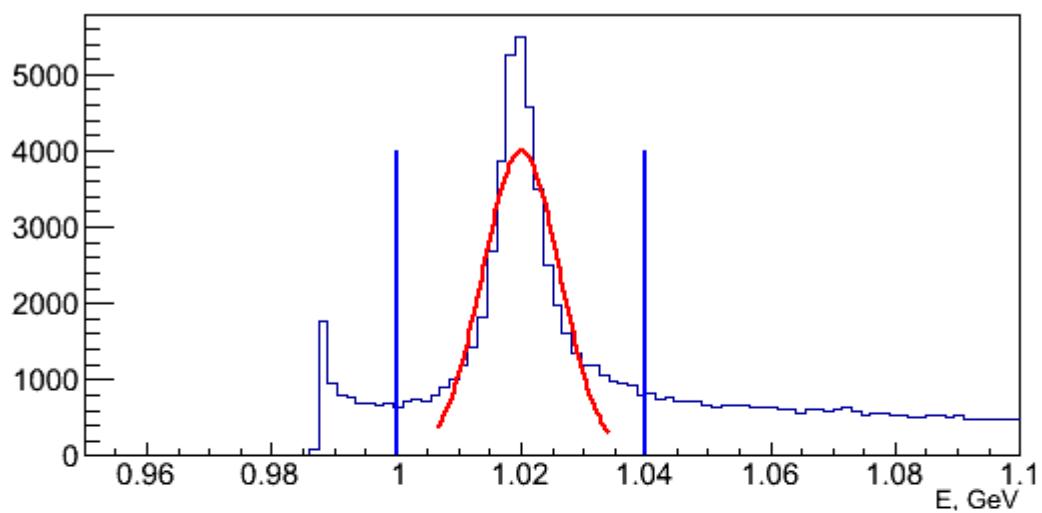


$\eta_c m(\phi, \phi)$, (cut on ϕ mass)



4) [etac_m_final vtx_stt_mix_nopid.png](#), downloaded 1290 times

$\phi: m(K^+ K^-)$



$\eta_c m(\phi, \phi), (\text{cut on } \phi \text{ mass})$

