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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:

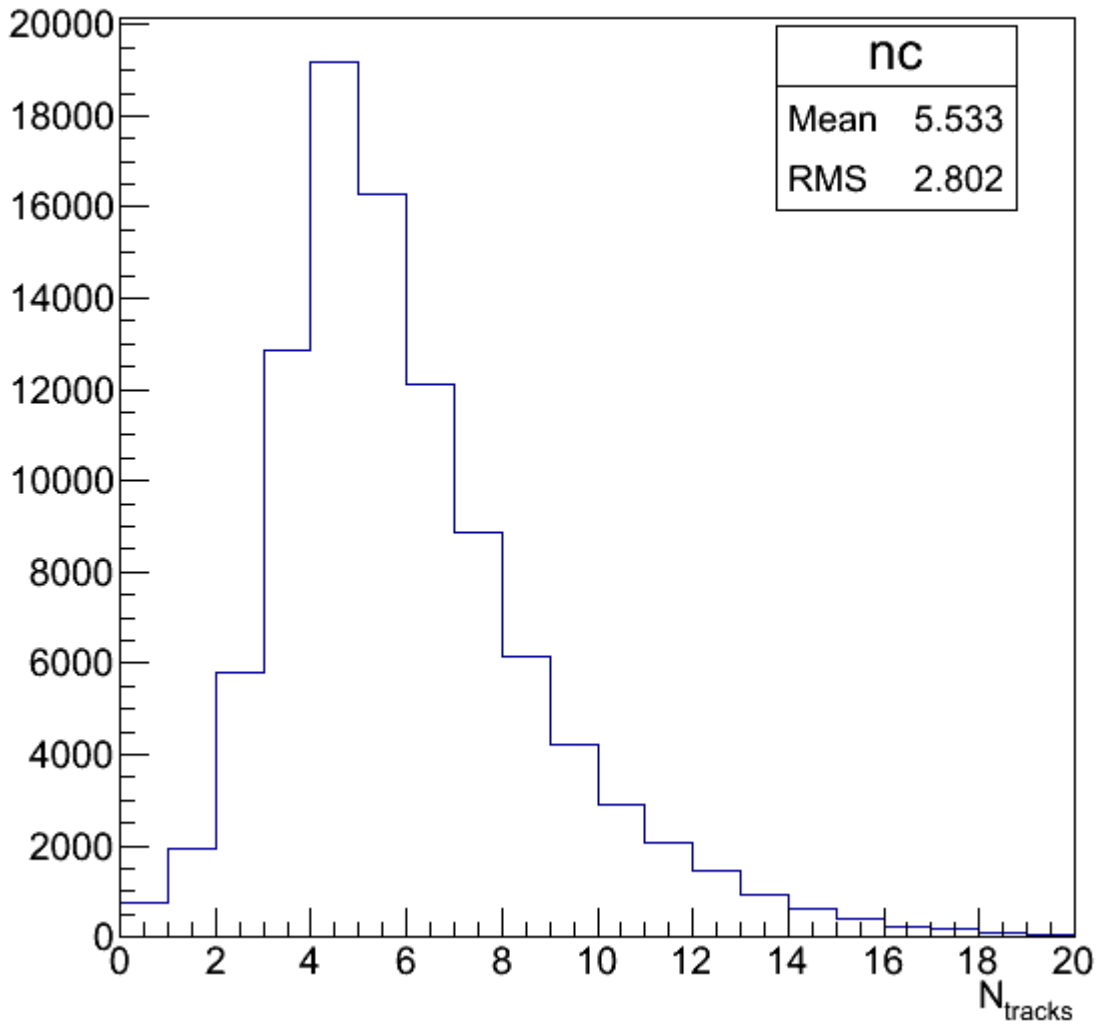
Here phi mass distribution has much higher tails from combinatoric and eta\_c reconstruction efficiency is 9.6% vs 11.6% applying MC PID.

Dima

### File Attachments

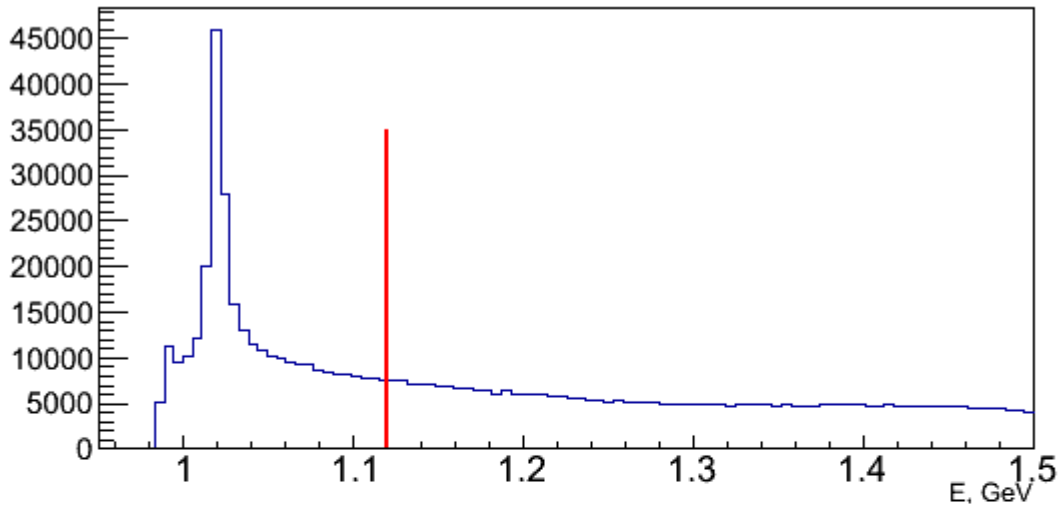
1) [etac\\_ncharged\\_stt\\_mix.png](#), downloaded 674 times

## Number of tracks

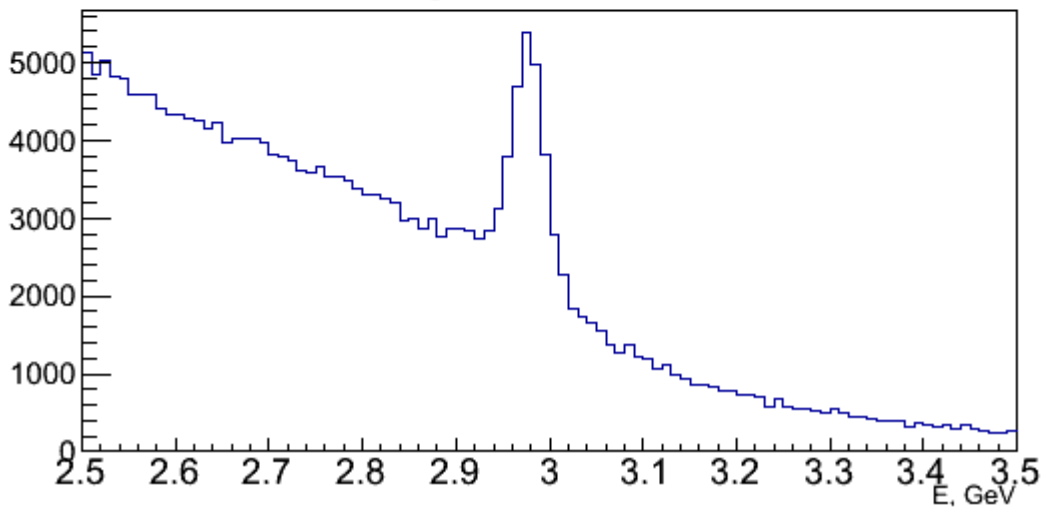


2) [etac\\_m\\_nocuts\\_stt\\_mix.png](#), downloaded 631 times

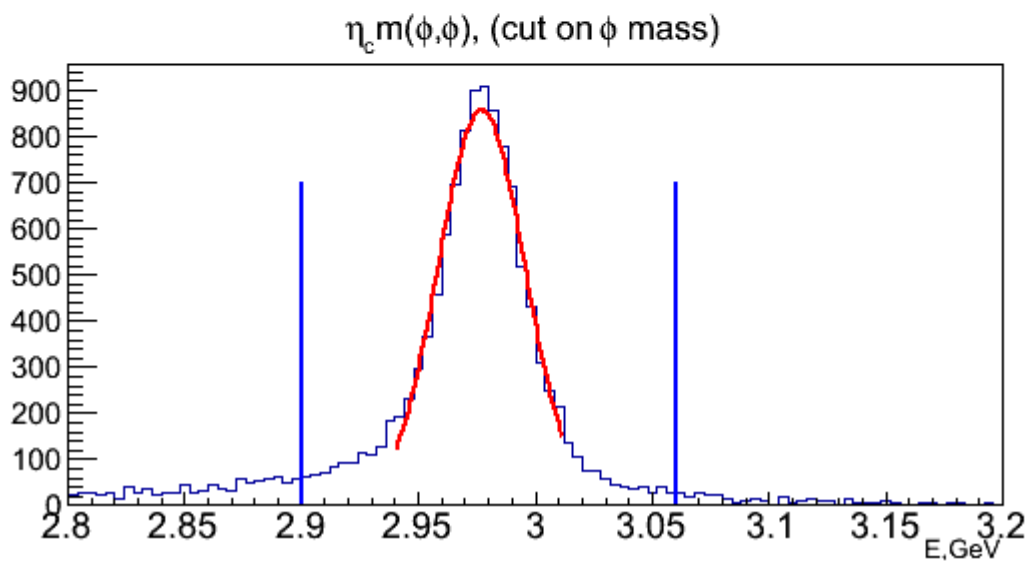
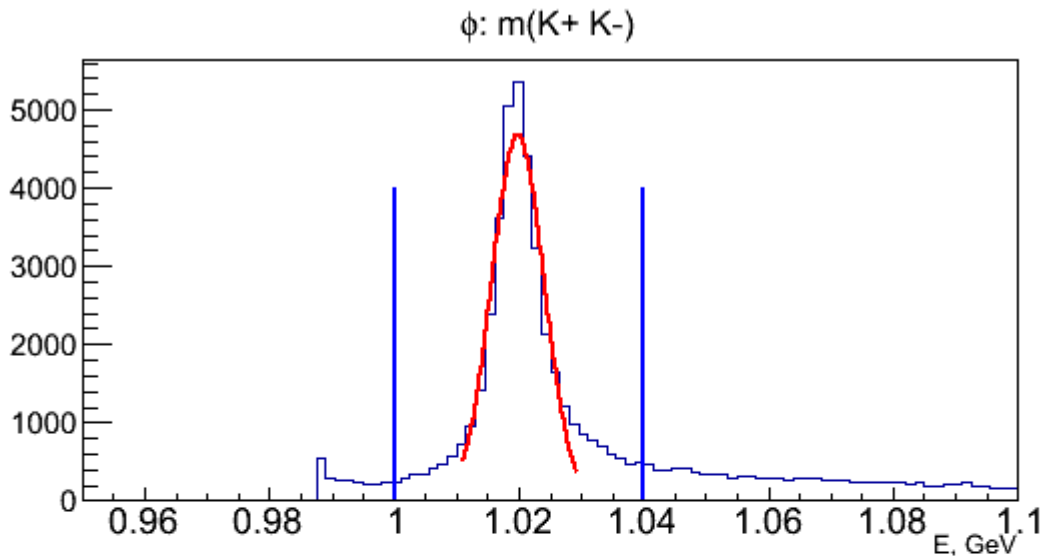
$\phi$ :  $m(K^+ K^-)$  (no cuts)



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

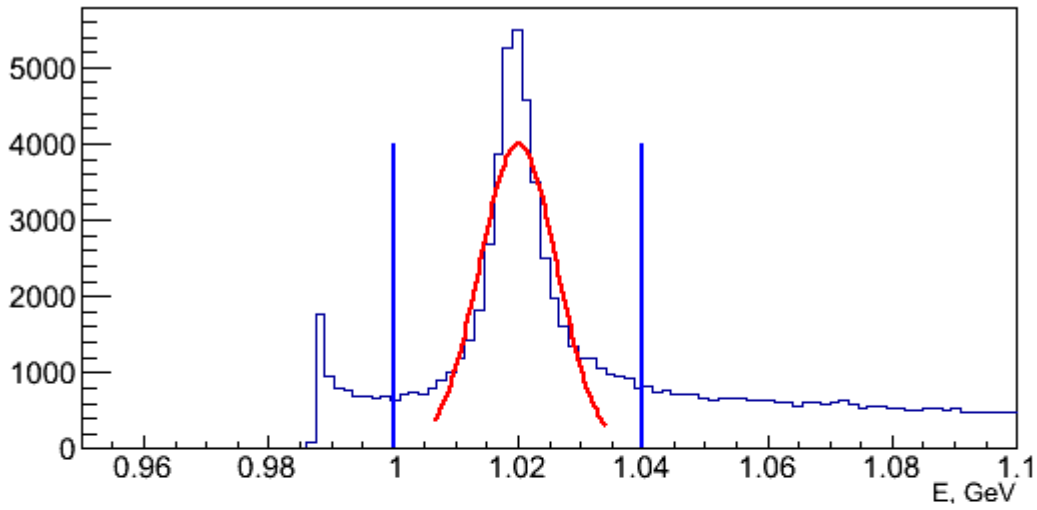


3) [etac\\_m\\_final\\_vtx\\_stt\\_mix.png](#), downloaded 681 times



4) [etac\\_m\\_final\\_vtx\\_stt\\_mix\\_nopid.png](#), downloaded 768 times

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



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

