Subject: Vertex fitters' problems
Posted by StefanoSpataro on Thu, 06 Jun 2013 10:40:24 GMT
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Dear all,
Laura and me are checking the features of our vertex fitters,
with the trunk version 20077. In the latest trunk the function GetMcTruth() returns null pointer,
than the trunk cannot be used.

We have simulated 10k ppbar->D*+D*-->D0pi+D0barpi-->k-pi+pi+k+pi-pi-, we have used MC
truth index to identify the kaon- and the pion+ of the D0 (we have not touched the d0bar).
We have uploaded all the relevant macros, you have only to modify the path of the DEC file in
the sim macro.

We run PndKinVtxFitter, PndVtxPoca and PndVtxPRG and compared the results. We were
able to find a tutorial only for PndKinVtxFitter. The tutorial for PndVtxPoca and PndVtxPRG is
missing then we hope we are using them in the proper way.

Please check the code.

Vertex residuals reco - mc (in cm) and chi2 for PndKinVtxFitter:

Vertex residuals reco - mc (in cm) and chi2 for PndVtxPoca:

Vertex residuals reco - mc (in cm) and chi2 for PndVtxPRG:

These are the obtained resultion values:

	X res	Y res	Z res
PndKinVtxFitter	2um	2um	wrong and asymmetric
PndVtxPoca	400um	400um	400um
PndVtxPRG	60um	60um	100um

Then...

PndKinVtxFitter is obtaining very very very narrow distributions on X and Y. How is it possible?
Z distribution is screwed. Chi2 is very low.
PndVtxPoca has too large resolution values, does not work. Decent chi2 maybe.
PndVtxPRG has more reasonable values, even if I believe they are a bit large. It is much
slower than the others, most probably because of the 10 iterations, but w/o a tutorial we were
not sure about which number to use. Chi2 too low.

Still not checked composite particles (i.e. D*)
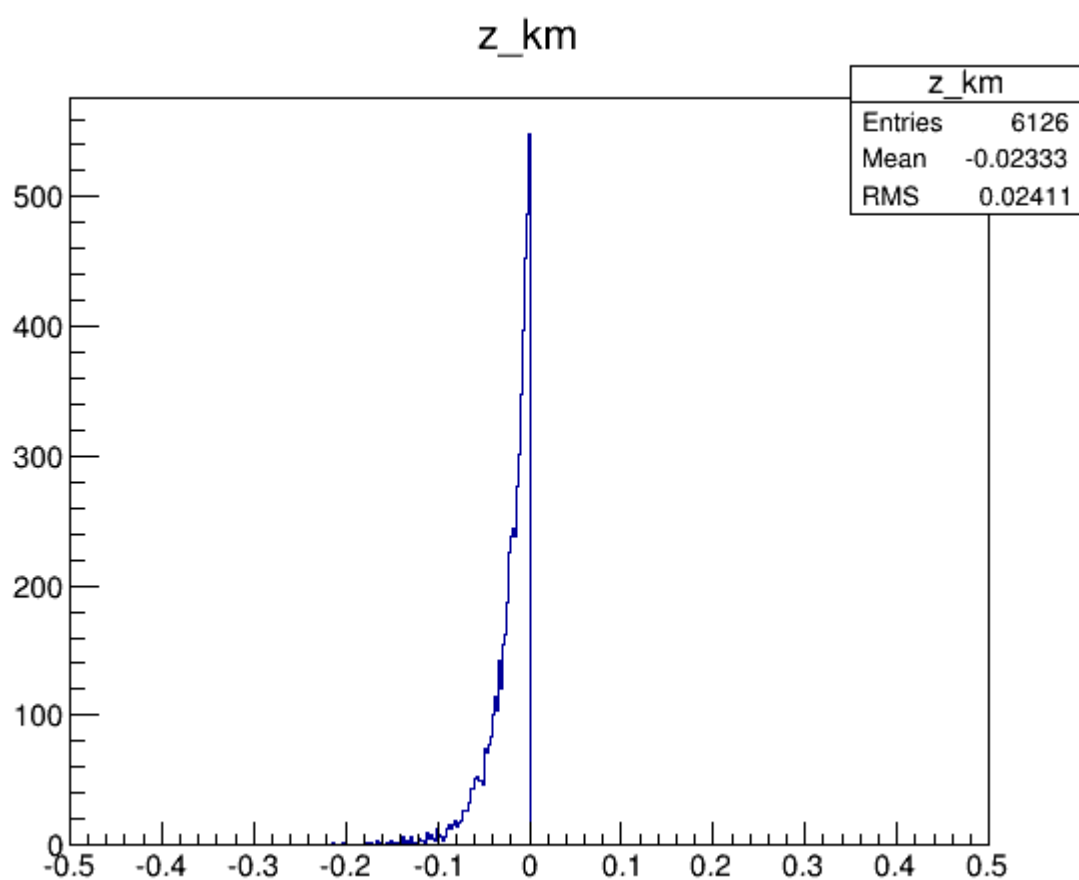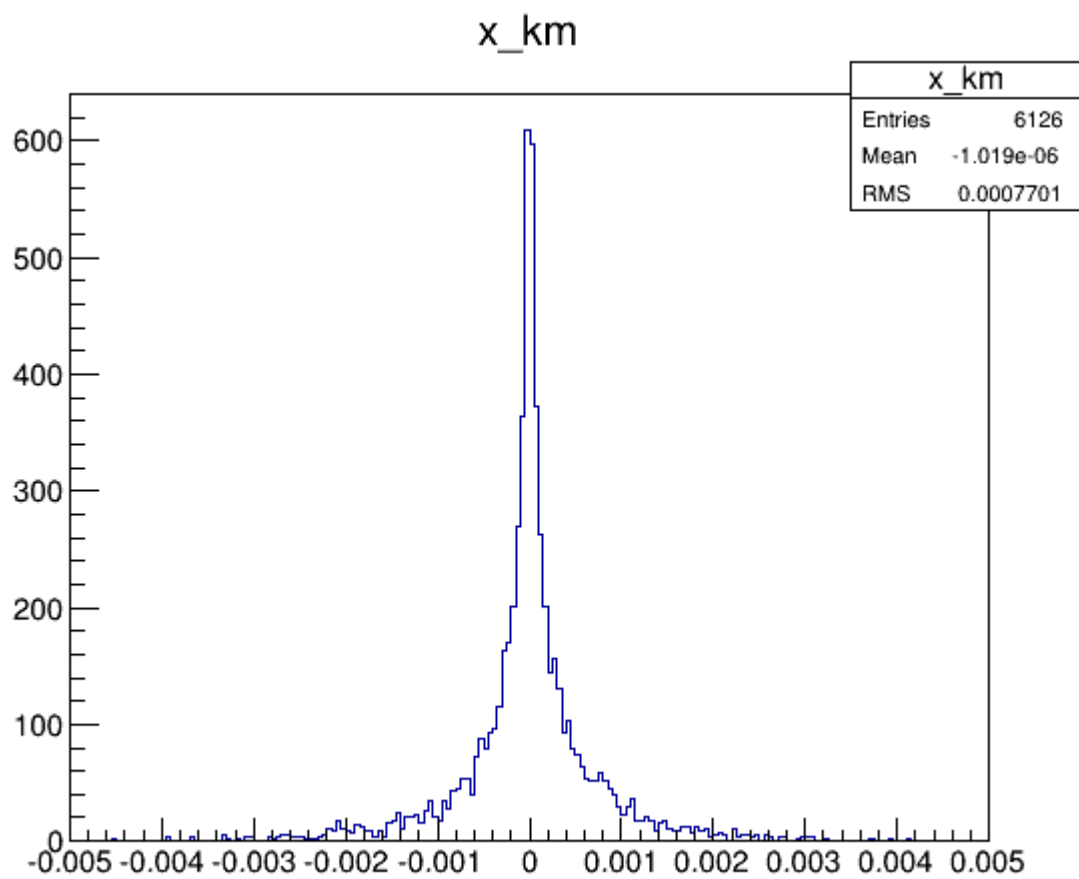
Then...

What to use? Could you please take a look?
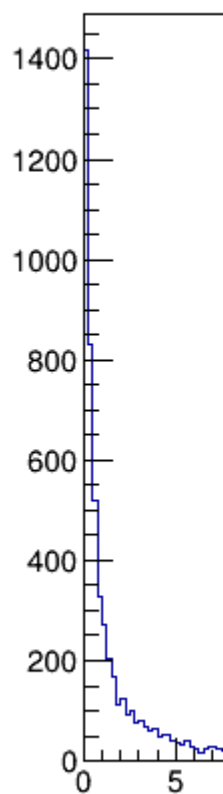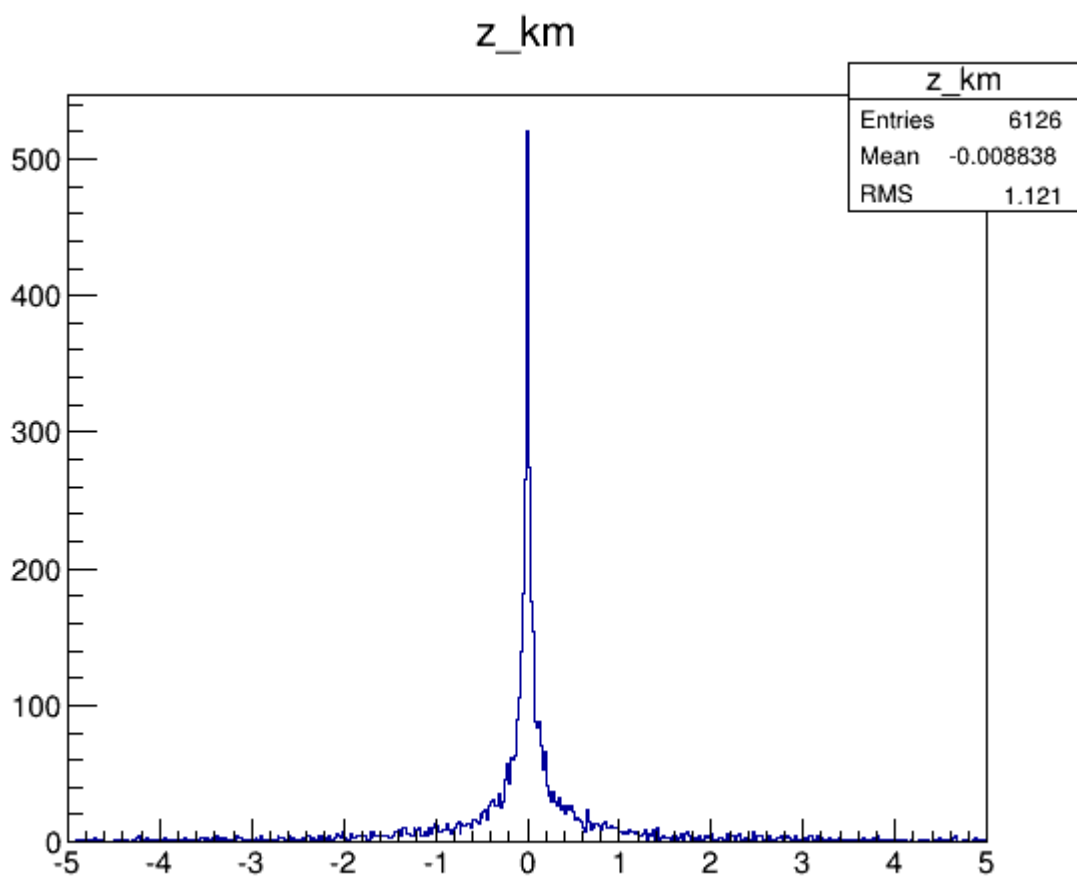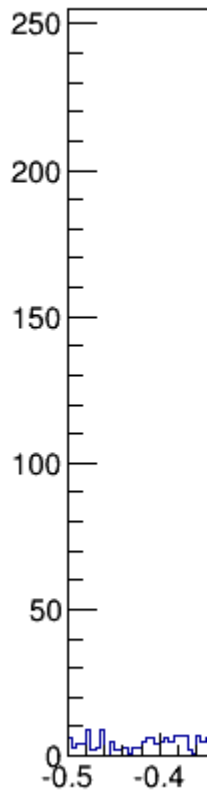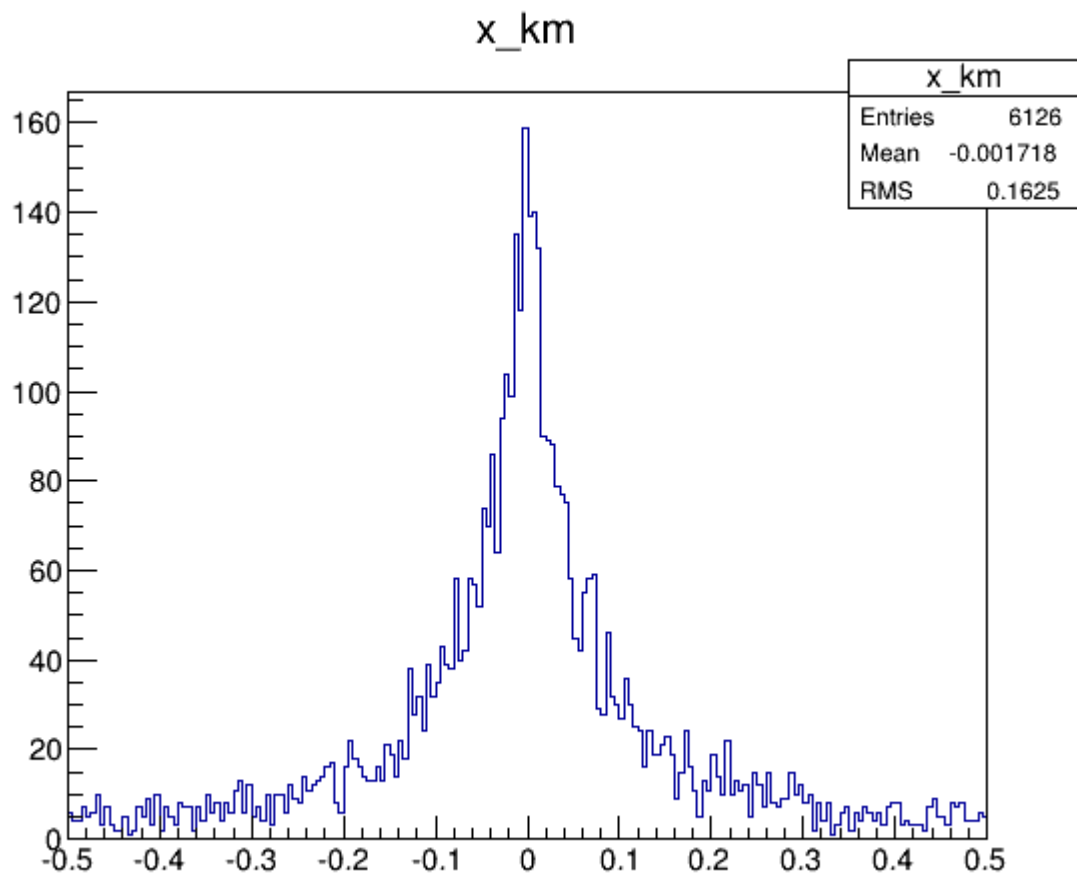
Many tanks in advance.

Laura and Stefano

File Attachments
1) PSI4040.DEC, downloaded 330 times
2) sim_complete.C, downloaded 320 times
3) digi_complete.C, downloaded 311 times
4) reco_complete.C, downloaded 341 times
5) pid_complete.C, downloaded 302 times
6) match_kinvtx.C, downloaded 298 times
7) vtx_kinvtx.gif, downloaded 855 times

x_km

z_km

8) vtx_poca.gif, downloaded 933 times

x_km

z_km

9) vtx_prg.gif, downloaded 919 times

x_km

x_km	
Entries	6126
Mean	1.189e-05
RMS	0.02267

z_km

z_km	
Entries	6126
Mean	-0.0008434
RMS	0.04334