Subject: Vertex fitters' problems
Posted by StefanoSpataro on Thu, 06 Jun 2013 10:40:24 GMT
View Forum Message <> Reply to Message

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...

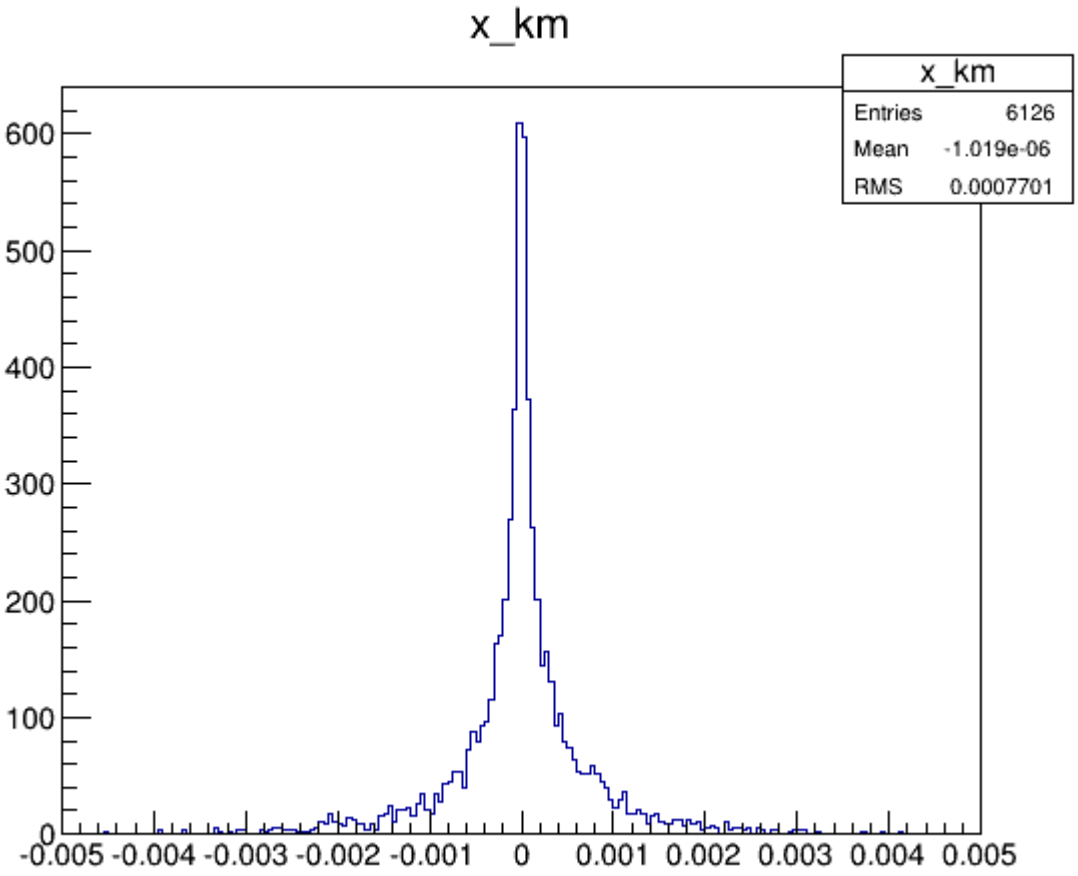
What to use? Could you please take a look?

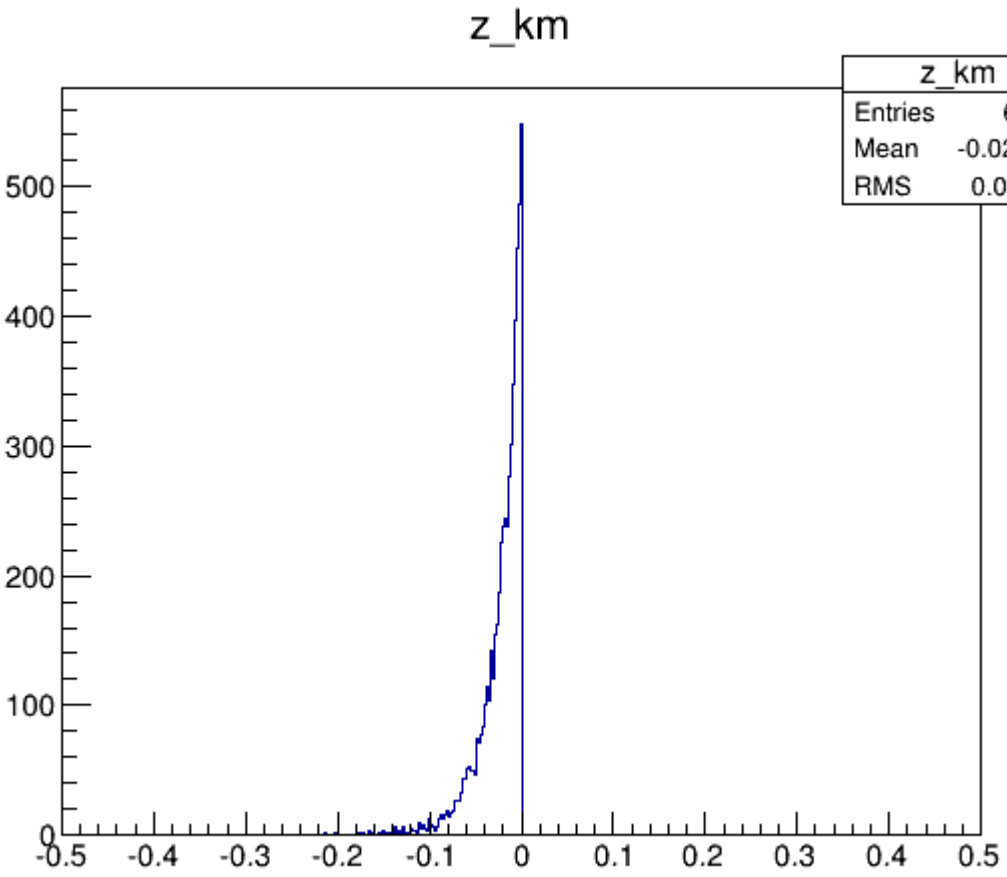
Many tanks in advance.

Laura and Stefano

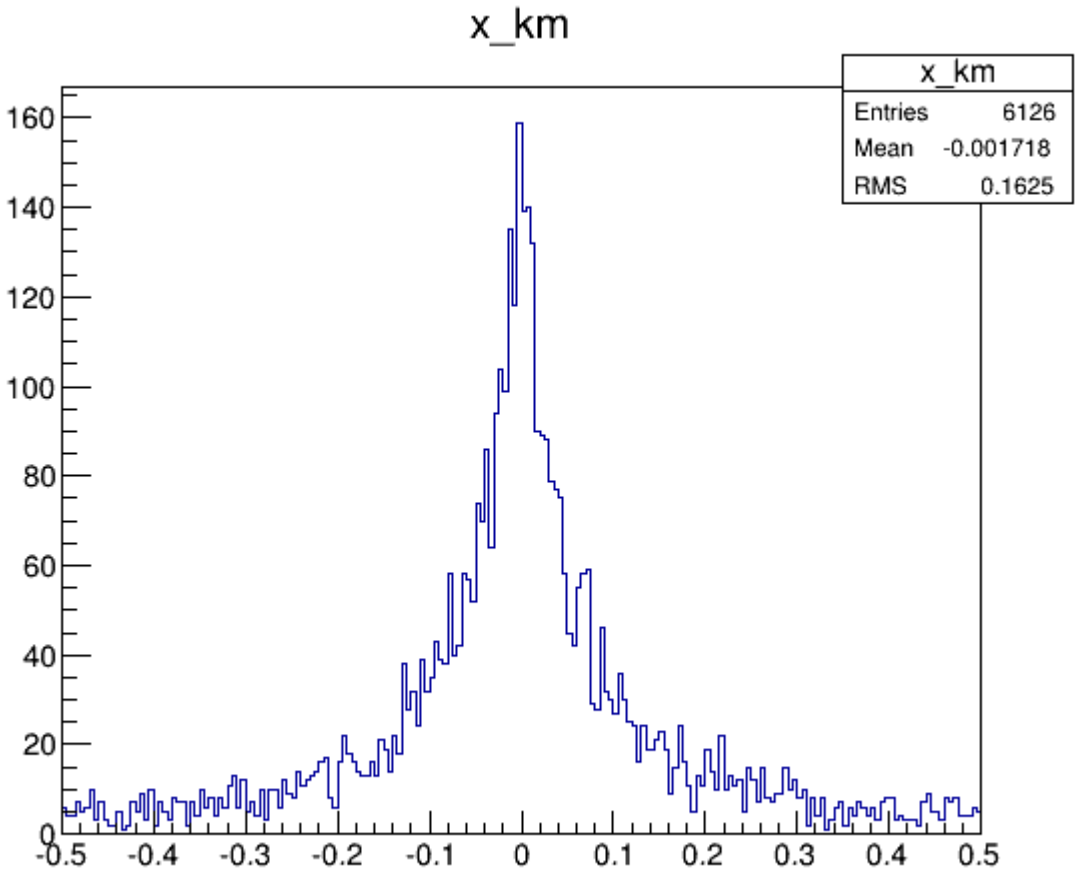
File Attachments

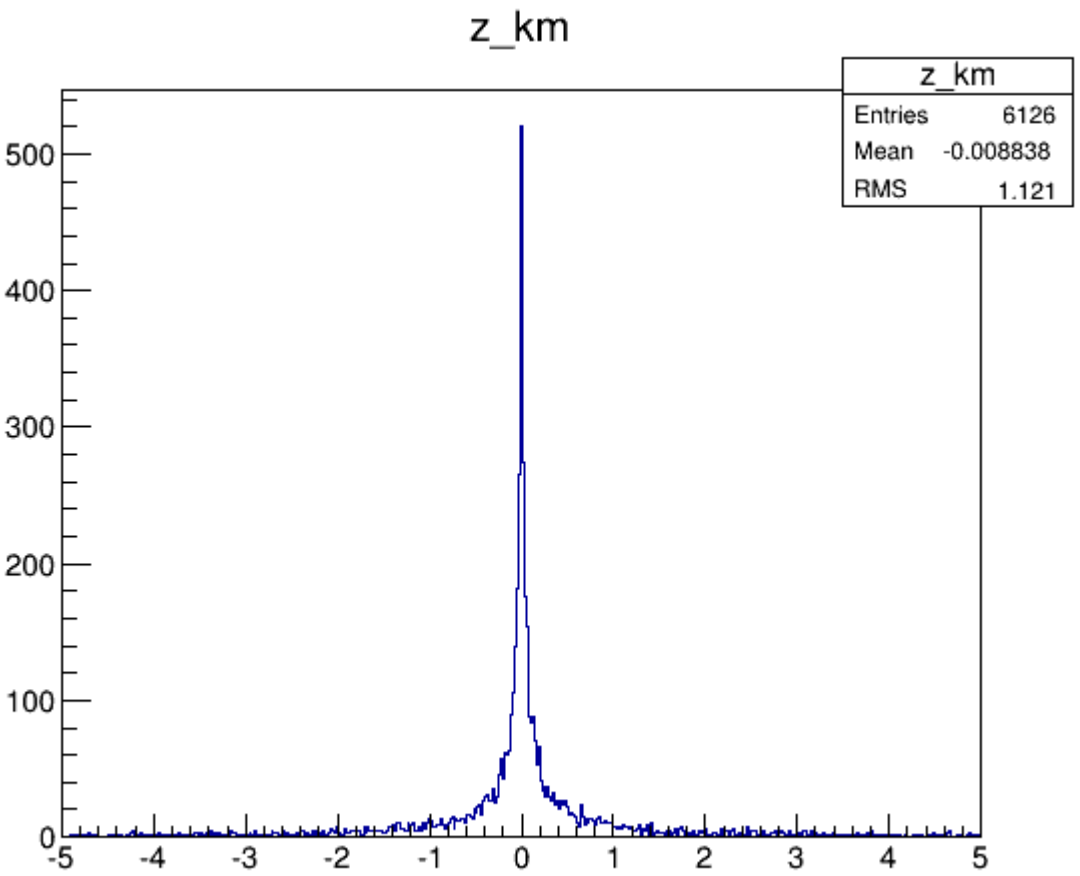
1) PSI4040.DEC, downloaded 532 times
2) sim_complete.C, downloaded 532 times
3) digi_complete.C, downloaded 505 times
4) reco_complete.C, downloaded 532 times
5) pid_complete.C, downloaded 503 times
6) match_kinvtx.C, downloaded 504 times
7) vtx_kinvtx.gif, downloaded 1751 times


x_km
x_km
Entries 6126
Mean -1.019e-06
RMS 0.0007701
600
500
400
300
200
100
0
-0.005 -0.004 -0.003 -0.002 -0.001 0 0.001 0.002 0.003 0.004 0.005

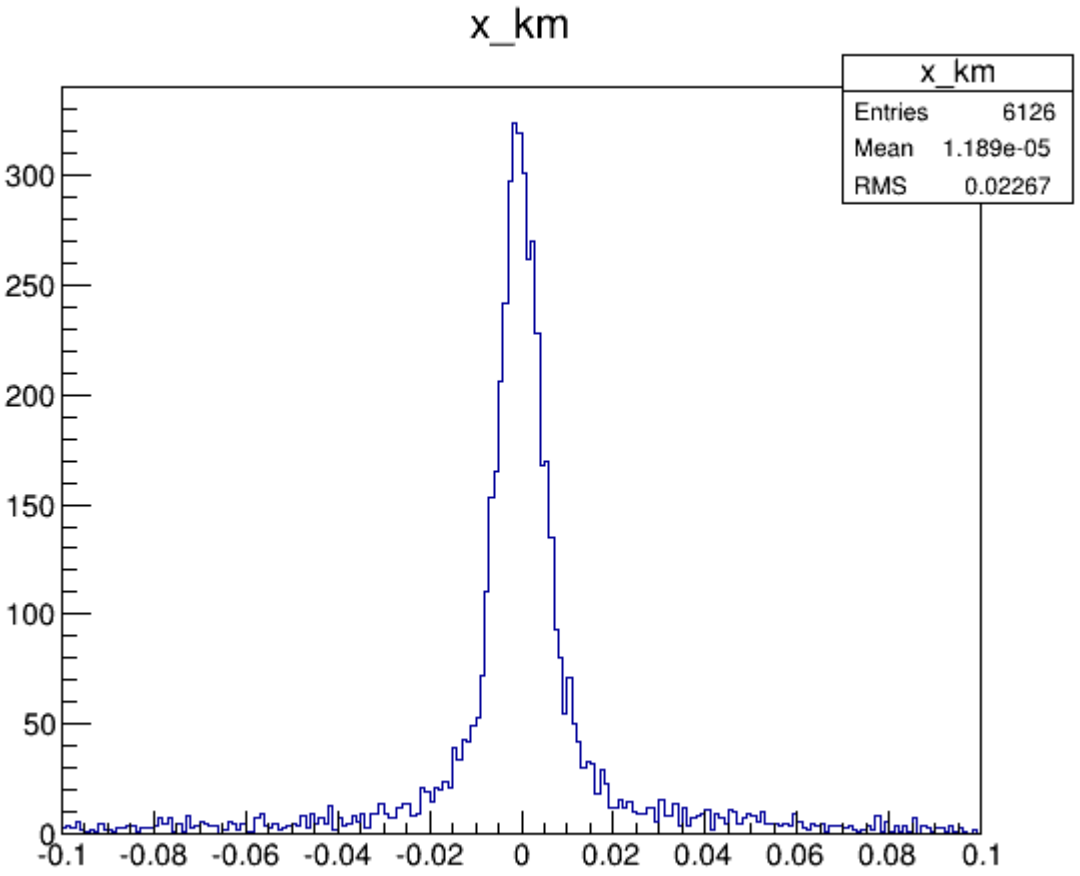

z_km
z_km
Entries 6126
Mean -0.02333
RMS 0.02411
500
400
300
200
100
0
-0.5 -0.4 -0.3 -0.2 -0.1 0 0.1 0.2 0.3 0.4 0.5

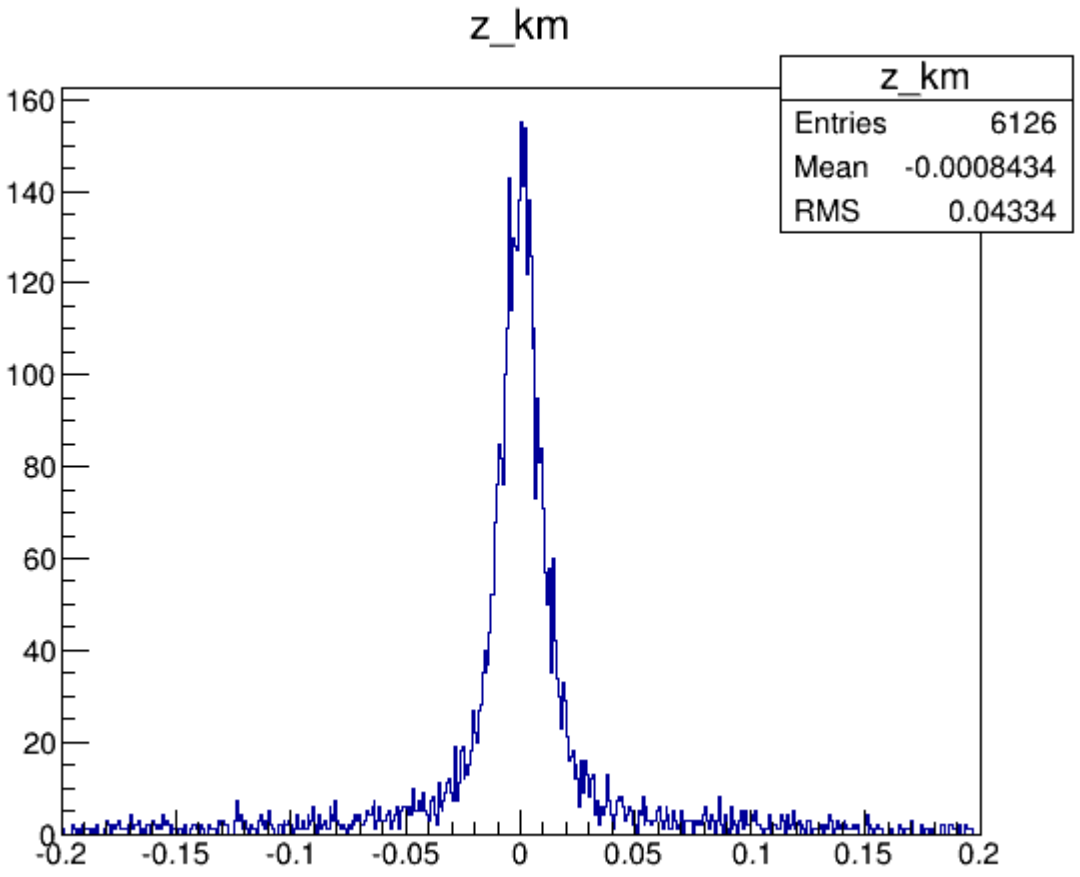
8) vtx_poca.gif, downloaded 1810 times


x_km
x_km
Entries 6126
Mean -0.001718
RMS 0.1625


z_km
z_km
Entries 6126
Mean -0.008838
RMS 1.121

9) vtx_prg.gif, downloaded 1816 times


x_km
x_km
Entries 6126
Mean 1.189e-05
RMS 0.02267
300
250
200
150
100
50
0
-0.1
-0.08
-0.06
-0.04
-0.02
0
0.02
0.04
0.06
0.08
0.1


z_km
z_km
Entries 6126
Mean -0.0008434
RMS 0.04334
160
140
120
100
80
60
40
20
0
-0.2
-0.15
-0.1
-0.05
0
0.05
0.1
0.15
0.2