Subject: Energy loss in MVD
Posted by StefanoSpataro on Fri, 12 Feb 2010 19:10:58 GMT
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Dear all,
Laura has fixed the calculation of the reconstructed dE/dx in PndPidCorrelator class. You can try to run macro/pid macros and to plot the dE/dx from PidCandidate.

If I shoot the detector with 1GeV/c muons, I have the following dE/dx distribution:

(unity: GeV/cm).
Just fitting the distribution with a landau (as it should be), we obtain the following values:

MPV: 2.83 MeV/cm
sig: 0.23 MeV/cm

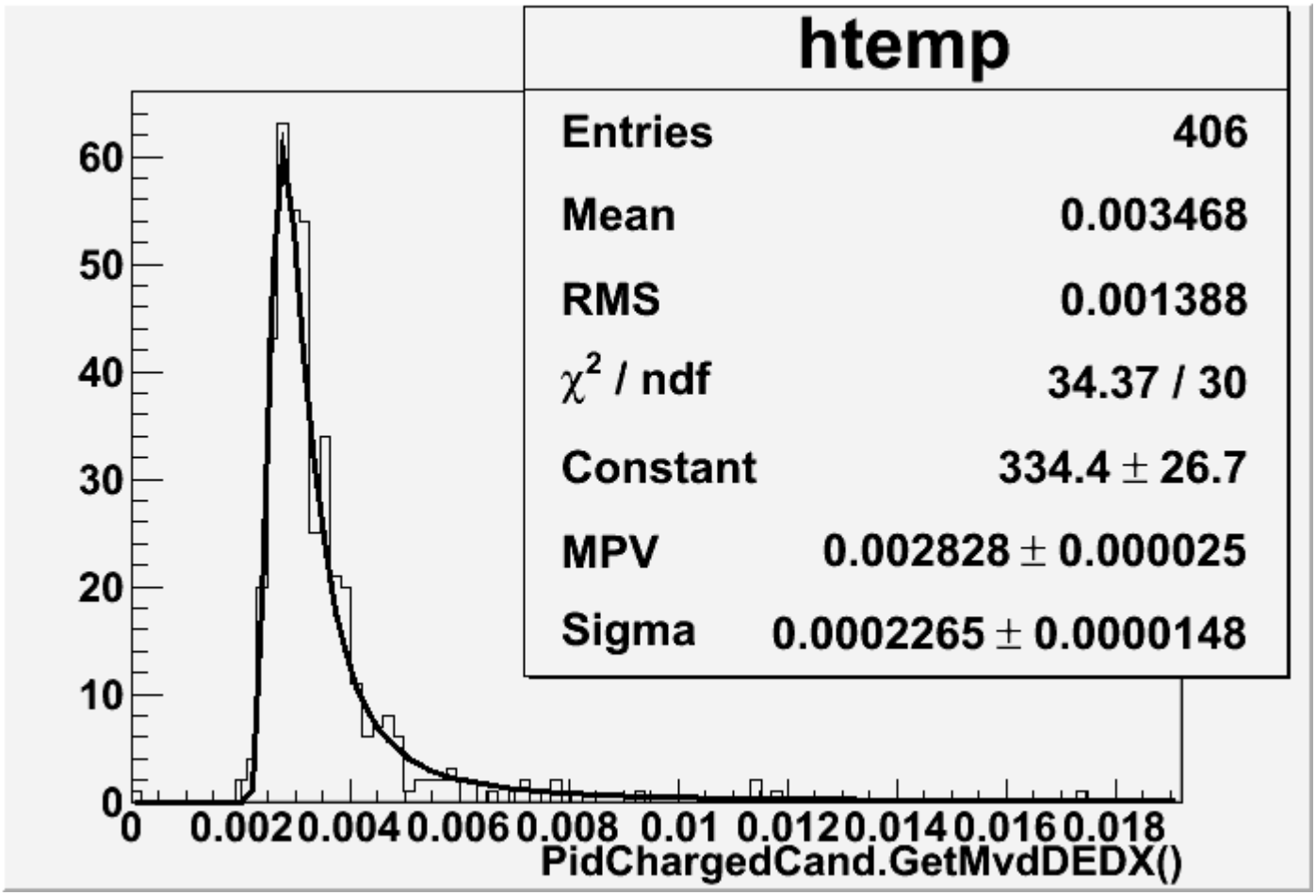
If we consider the silicon density rho = 2.33 g/cm^3
-> dE/dx ~ 1.21 [MeV cm^2 / g]

I would like to ask to MVD experts how much is the "theoretical value", I would suppose you have already some tables with the correct values.
We have also compared the reconstructed dE/dx with the MonteCarlo value, and the results seem in agreement, but I would like to know what is coming from "physics" before believing blindly in simulation.

Thanks in advance.

File Attachments

1) mvd_dedx.gif, downloaded 1339 times


htemp
Entries 406
Mean 0.003468
RMS 0.001388
χ² / ndf 34.37 / 30
Constant 334.4 ± 26.7
MPV 0.002828 ± 0.000025
Sigma 0.0002265 ± 0.0000148
60
50
40
30
20
10
0
0 0.002 0.004 0.006 0.008 0.01 0.012 0.014 0.016 0.018
PidChargedCand.GetMvdDEDX()