Subject: TPC dE/dx
Posted by StefanoSpataro on Tue, 08 Mar 2011 14:54:08 GMT
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Dear all,
I have tried to write a "quick and dirty" algorithm to calculate TPC dE/dx with a truncated mean
-> pid/PidCorr/PndPidTpcInfo.cxx
The energy is taken from PndTpcCluster::amp(), the dx is calculated somehow from the distance of consecutive hits, as a first approximation (in reality it is the sum of the semi-distance with the previous hit and the semi-distance with the next hit).

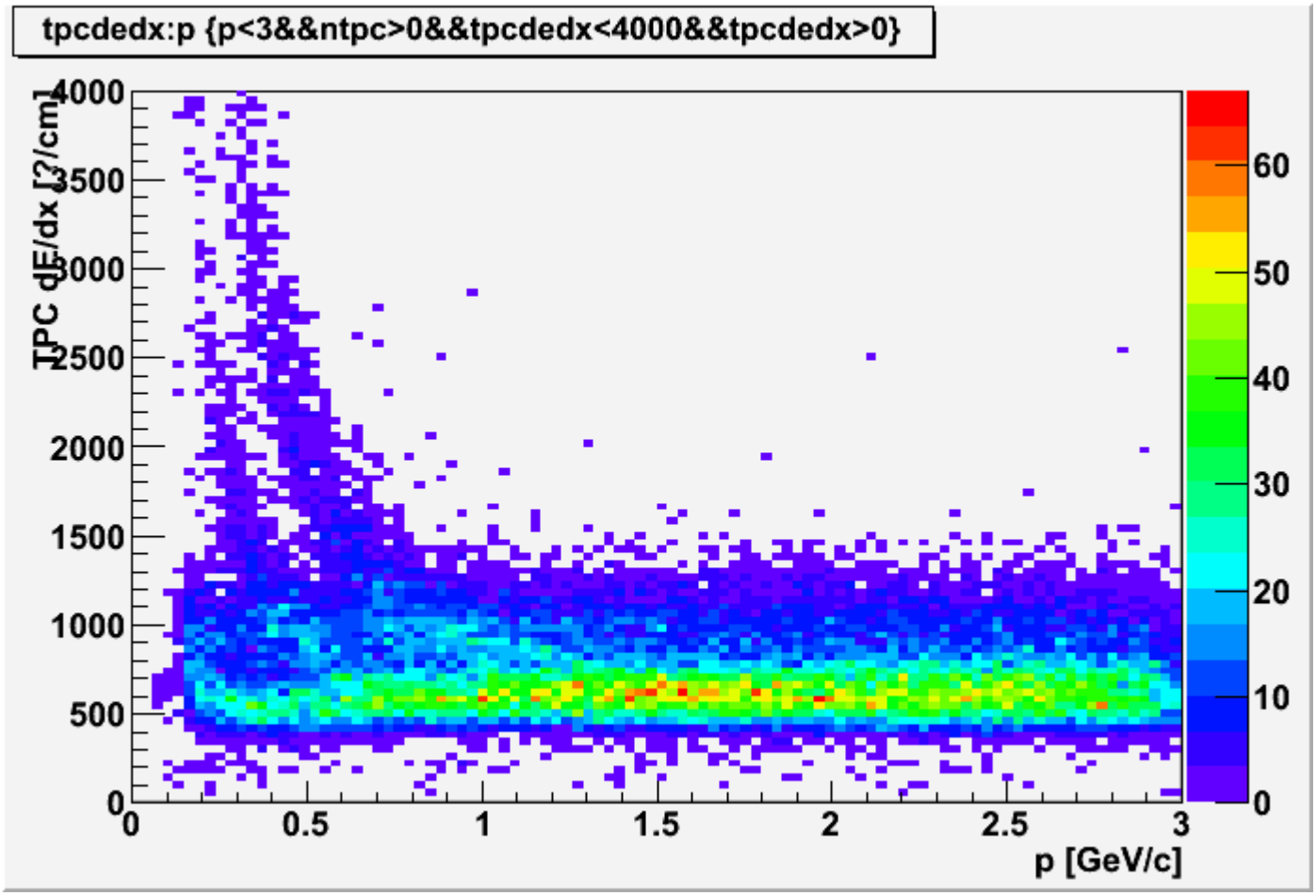
This is the plot I obtain, after 10k events * (p + e + pi + mu + k) with the box generator:

If I compare the plot to what present in the TPR, page 142 of the pdf, I have some questions:
a) What is the unity of PndTpcCluster::amp()? If I assume it is in GeV as the pandaroot standard, I obtain a around MeV/cm, while I suppose it should be something like keV/cm. And the numbers are still different. (I am using Geant3+Alice settings) Maybe the gas mixture was changed?
b) the plot is worse than the TPR one, because it is using reconstruction and not MC, but it looks like electrons are less separated now than the old plot (where they were quite far). Here they are overlapping with a bit higher de/dx, you are not able to find them like in the TPC plot. This is not clear to me.

Comments from experts are welcome.

File Attachments

1) tpc_dedx_test.gif, downloaded 1454 times


tpcdedx:p {p<3&&ntpc>0&&tpcdedx<4000&&tpcdedx>0}
TPC dE/dx [?/cm]
4000
3500
3000
2500
2000
1500
1000
500
0
0
0.5
1
1.5
2
2.5
3
p [GeV/c]
60
50
40
30
20
10
0