Subject: very high reconstructed momenta of muons
Posted by Malgorzata Gumberidze on Wed, 11 Apr 2012 22:58:18 GMT
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Dear tracking experts.

During test of the TMVA i was surprise to see some number of track with reconstructed momenta which are very high in comparison to the monte carlo
value (Look into the attached plot: momentum.gif, keep in mind that i have also higher values, but i put limit on x-axis).

So let's me try to explain what i was dung.

I'm using PandaRoot version nov11 and externals may11.

I have simulated muons (flat distributions using pgun) in the momentum range:
0.2 GeV/c till 5GeV/c. They in my analysis i select

1. only primary tracks
   if (mctrack->GetMotherID()!=-1) continue;

2. i check if the reconstructed track is correlated to the monte carlo one:
  if (pidCand->GetMcIndex()!=mc) continue;

3. if i have more then one reconstructed track which belong to the same monte carlo i select one which has momentum closest to monte carlo one.

I tried to have a look (after some advices from Stefano) if one can find some topology of this high momenta looking into: number of hits in MVD or STT or
theta or phi or chi2 from fit .....

SO in the attachment you can see several plots. All plots are done as a function of momentum, so you can see not only problematic region, but also good one. In the case when i plot theta vs phi i put cut on p > 6 GeV/c.

In general looking into theta or phi it does not look that this high momenta comes from some specific region of the PANDA. In case of STT hits it looks that they have smaller number of the hits, below 28. But generally from the topology they do not look much different then good momenta track, but maybe i have overlook something.

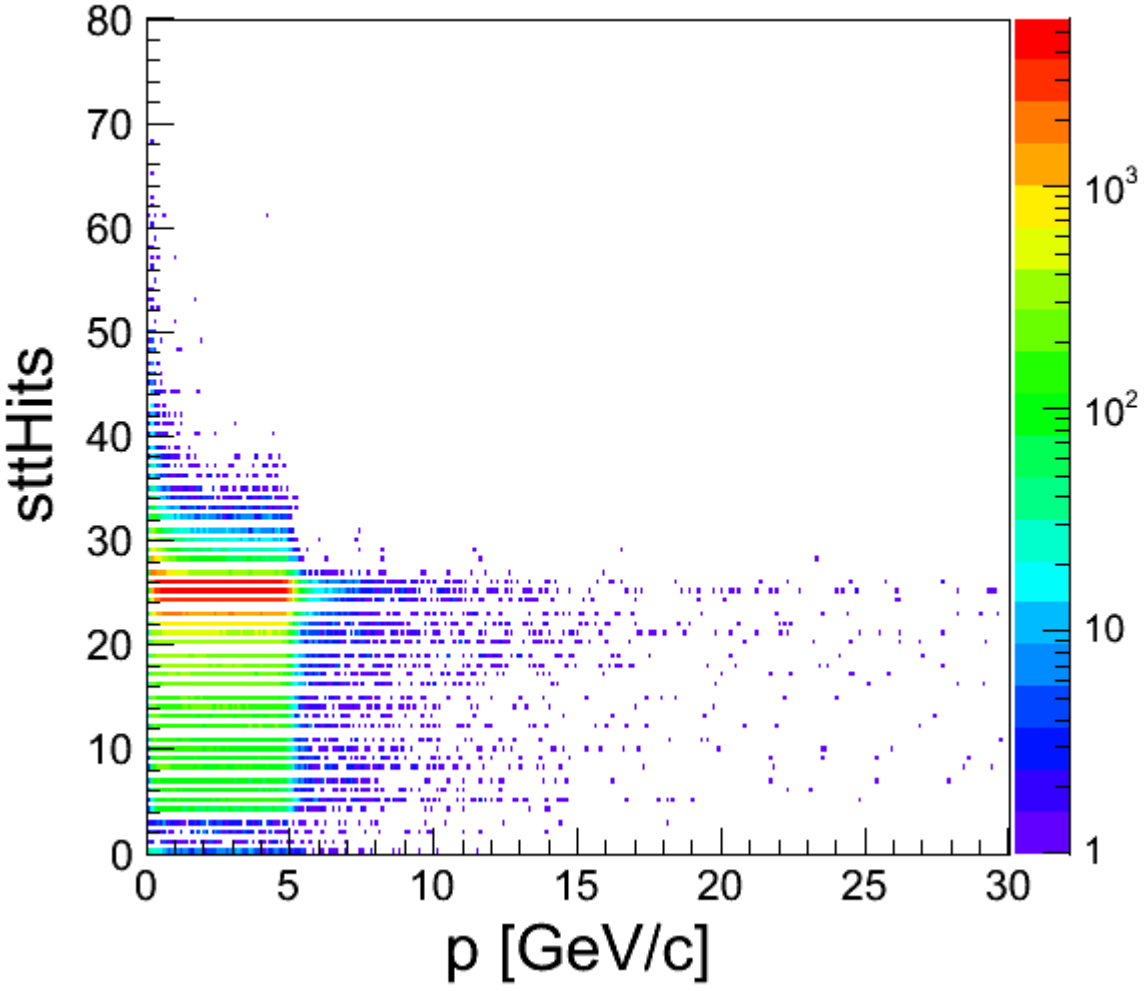
I hope that the names of plots are self-explaining.

So i do not know if i do something wrong, or it is like it is …. at least it looks strange.

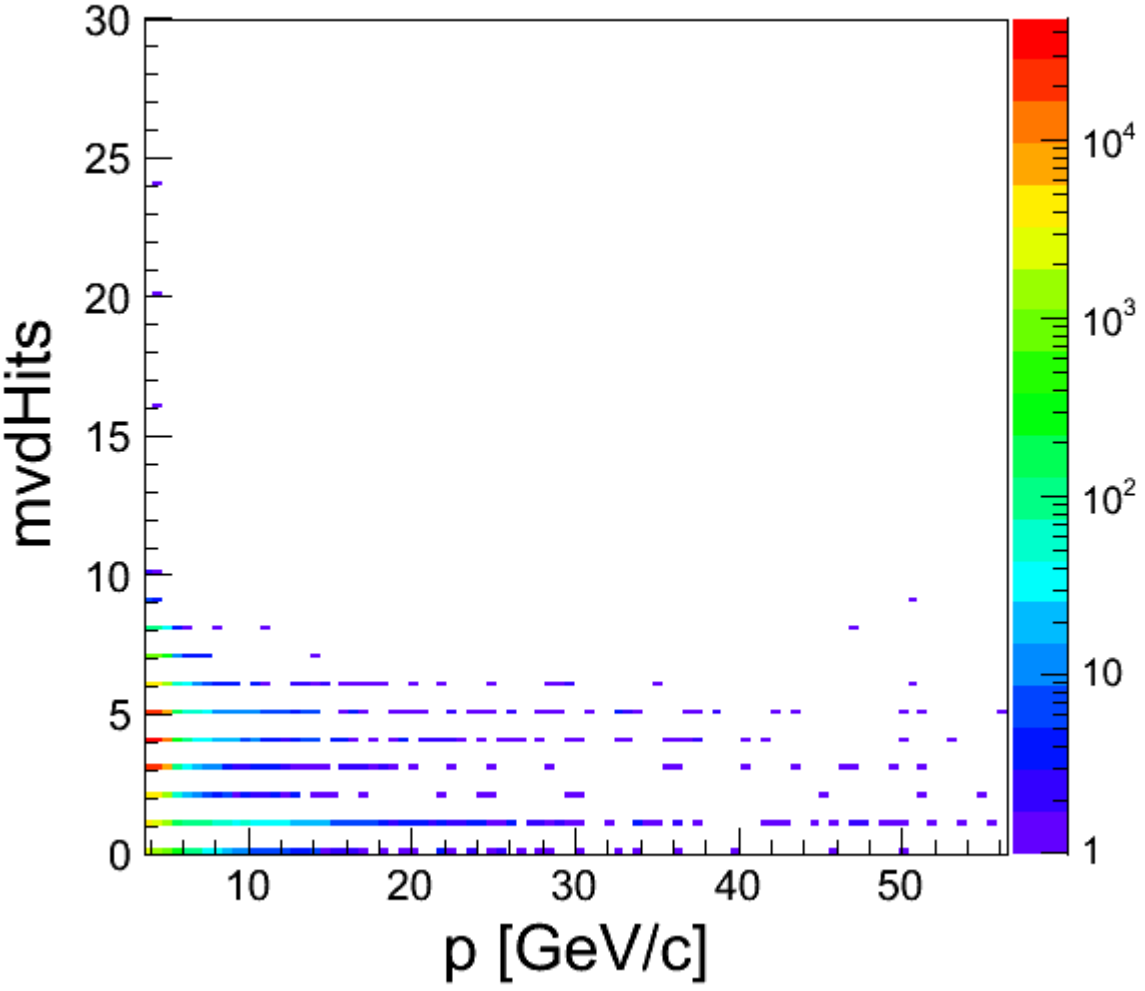
gosia

File Attachments

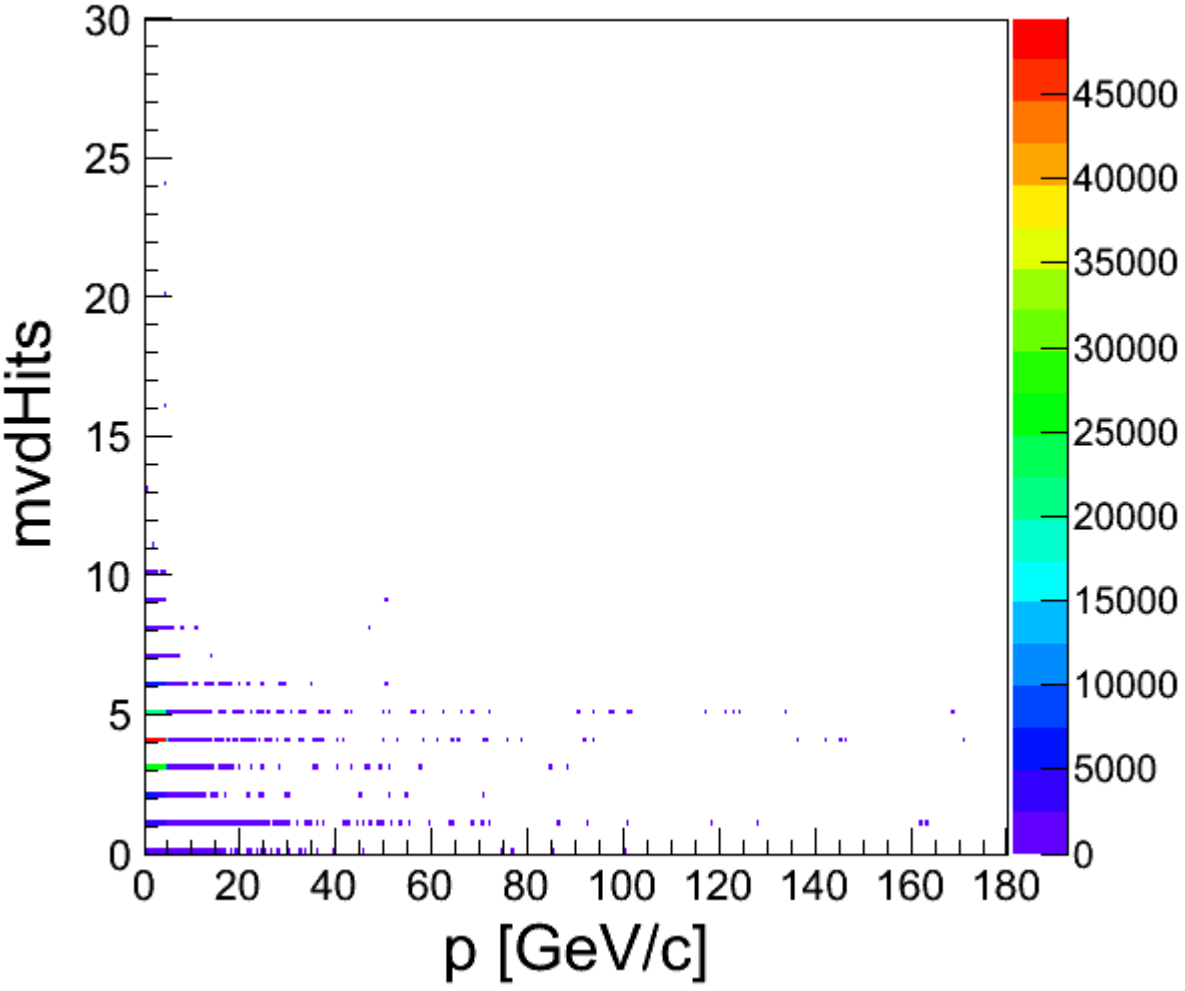
1) muon_sttHits.gif, downloaded 997 times



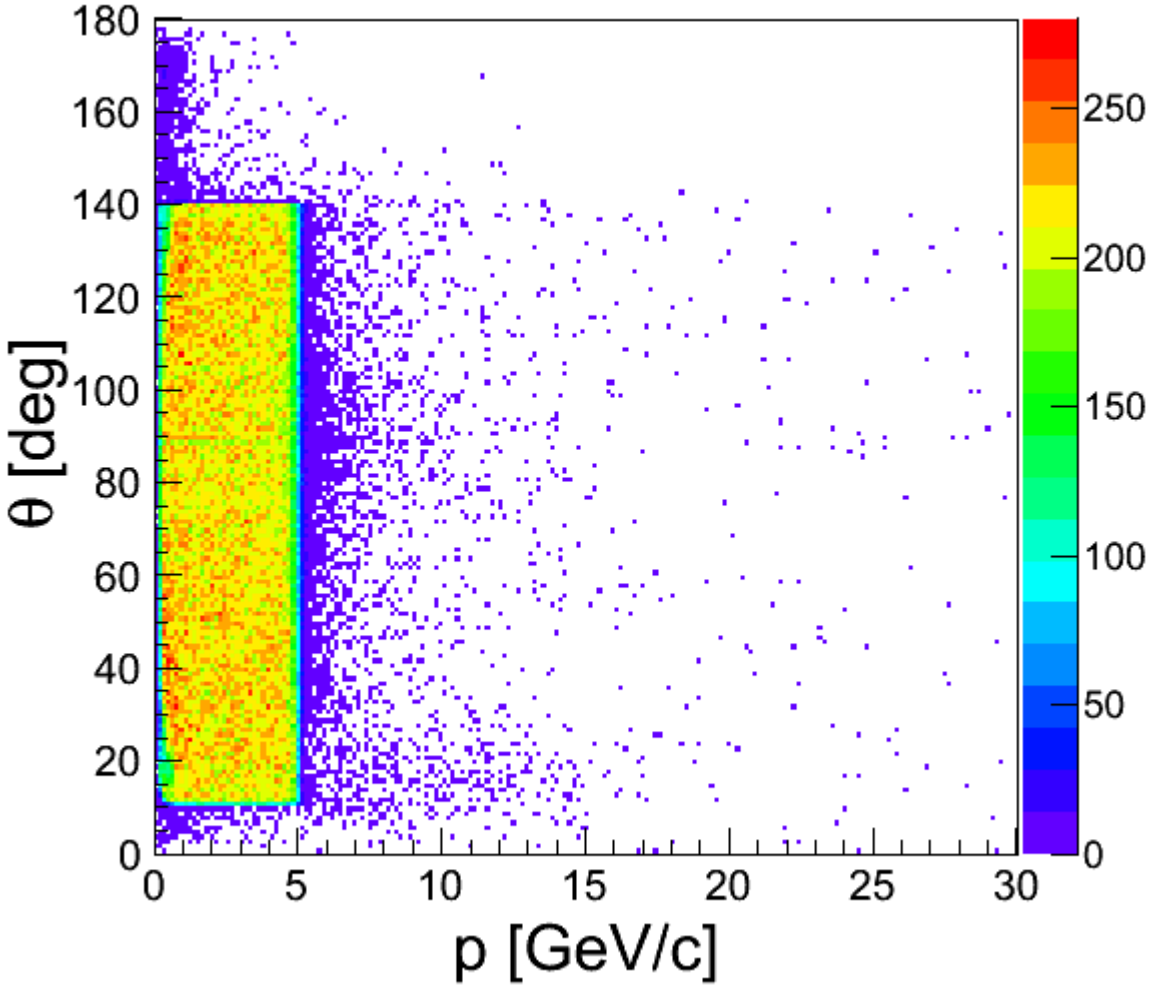
2) muon_mvdHist_zoom.gif, downloaded 1138 times



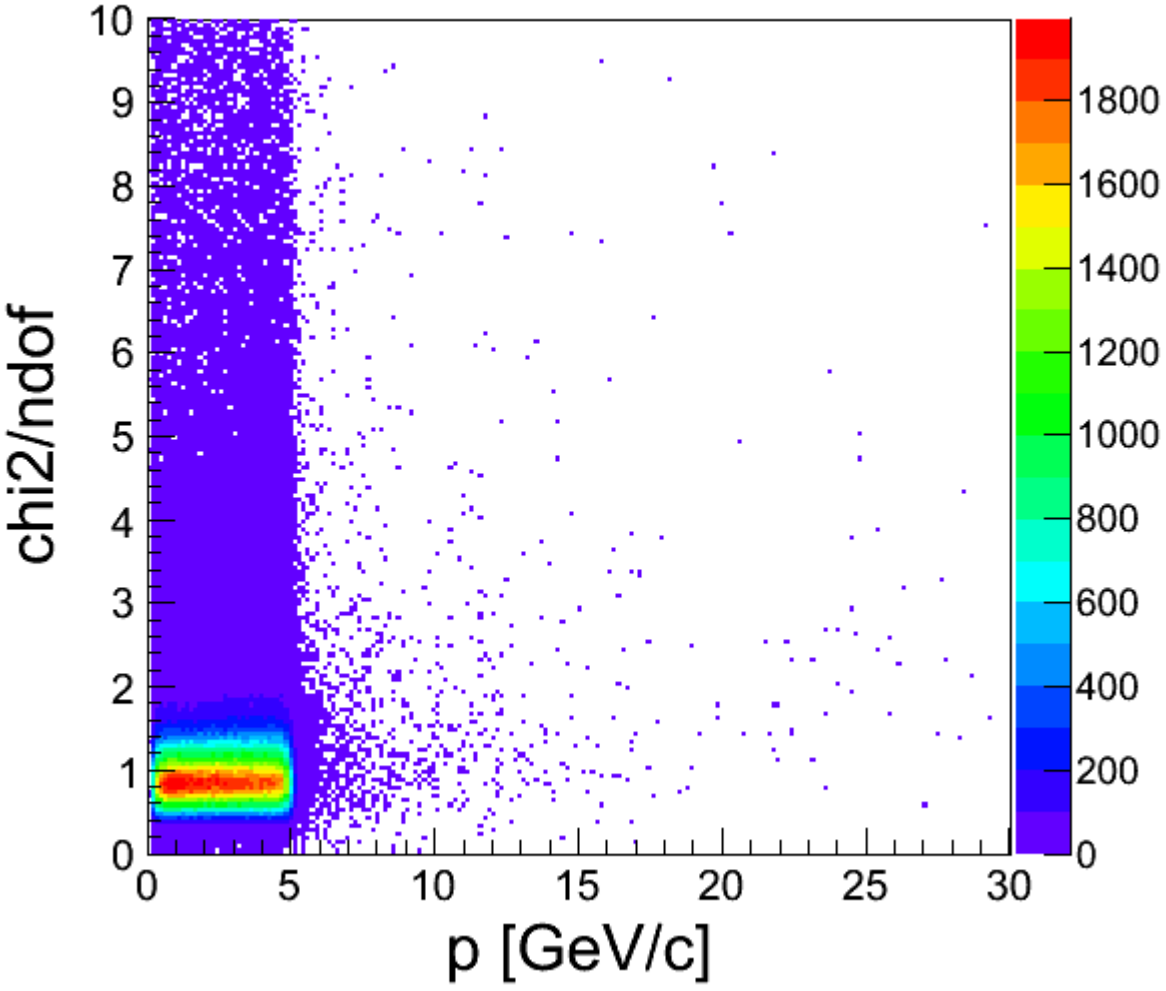
3) muon_mvdHits.gif, downloaded 1117 times



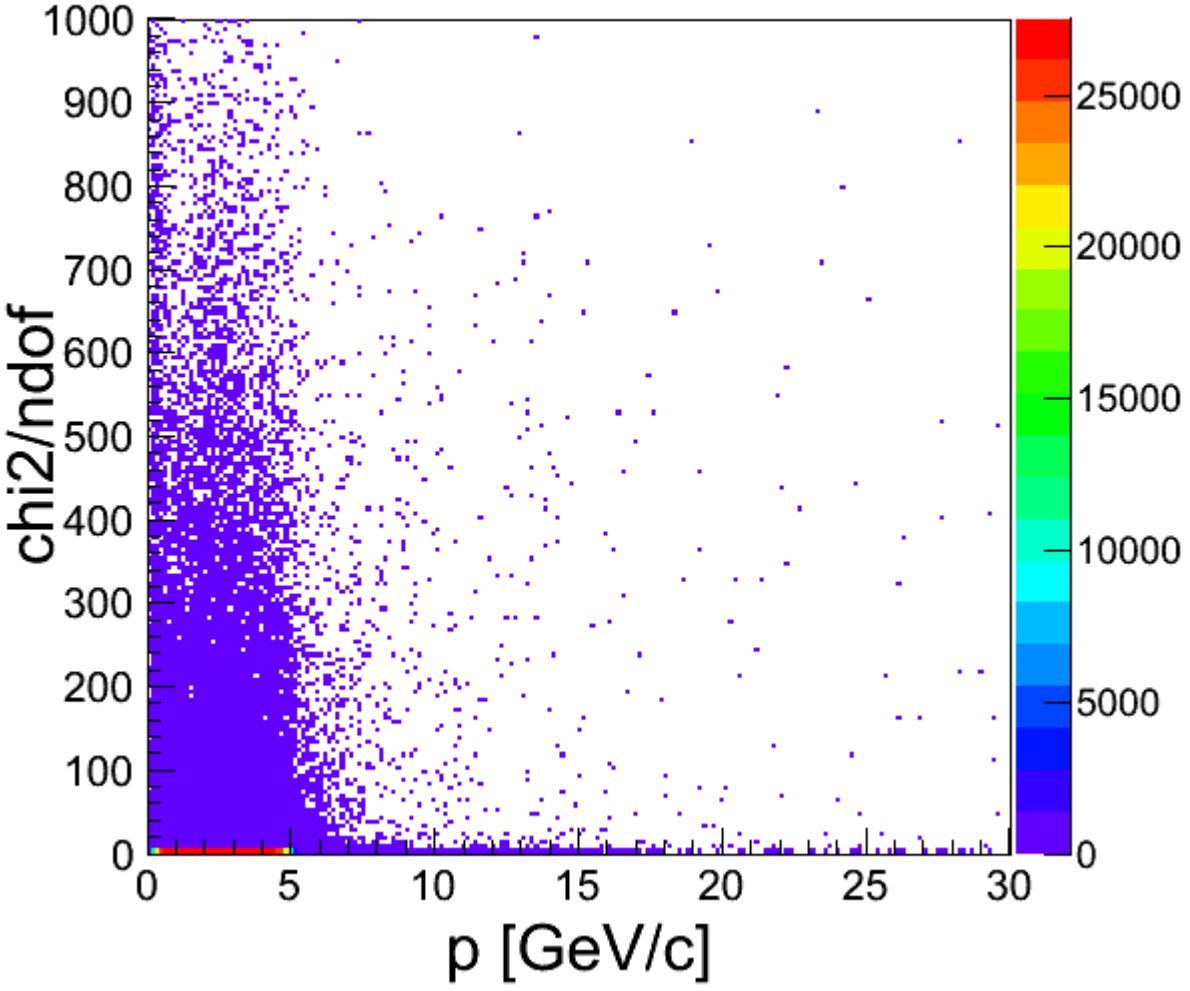
4) muon_theta.gif, downloaded 1138 times



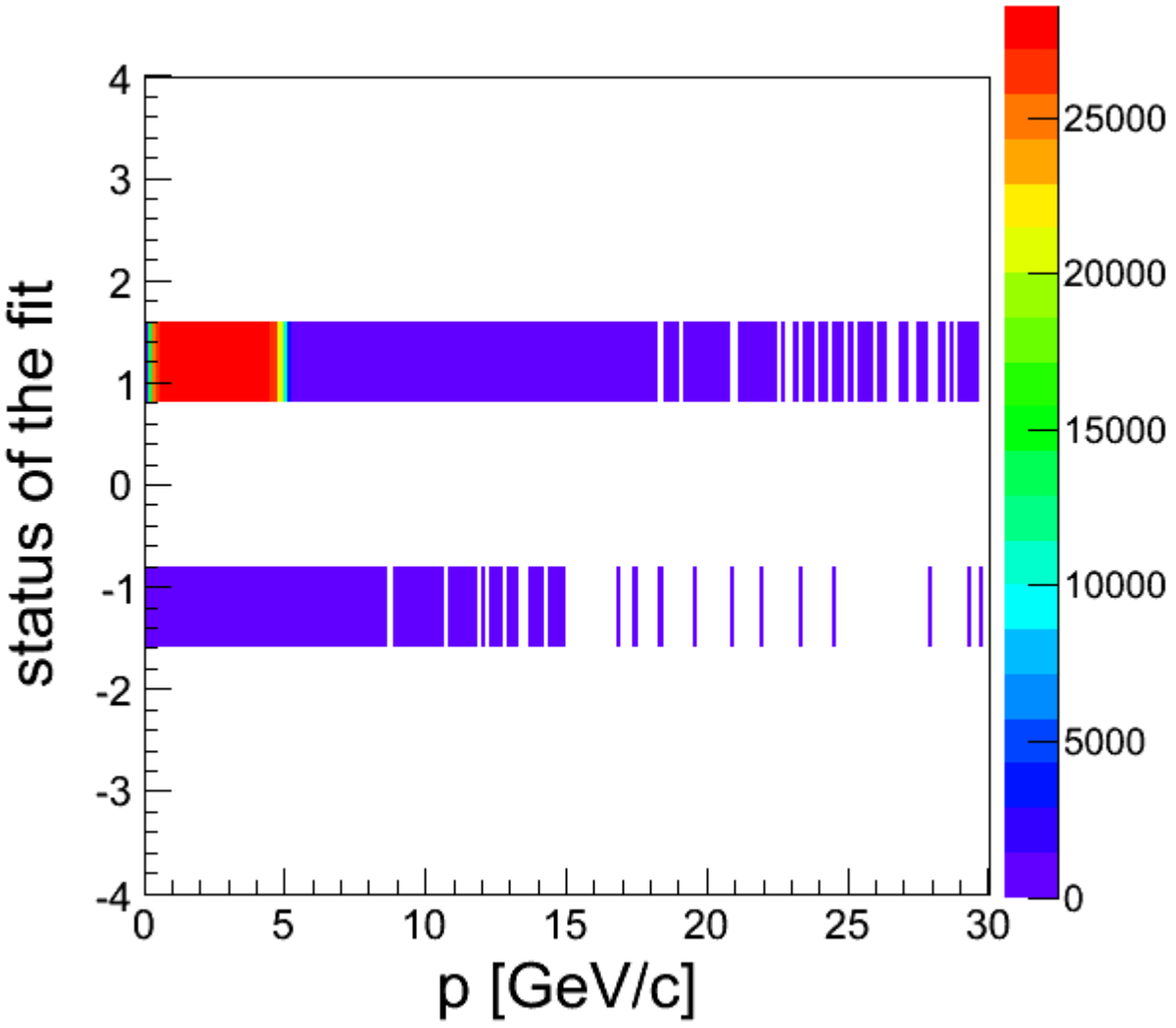
5) muon_chi2ndof_zoom.gif, downloaded 1153 times



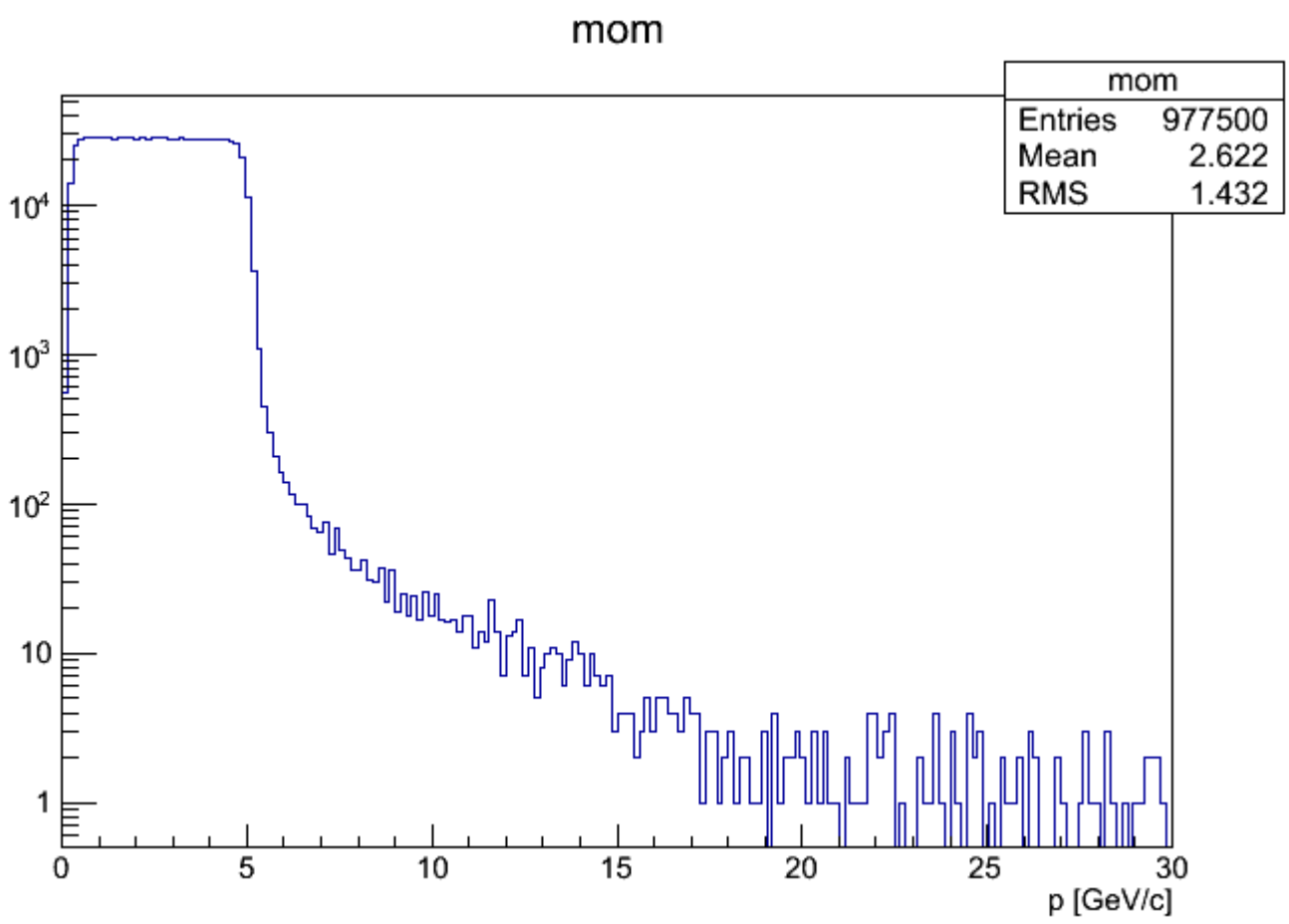
6) muon_chi2ndof.gif, downloaded 1169 times



7) muon_fitstat.gif, downloaded 1151 times



8) momentum.gif, downloaded 1159 times


mom
mom
Entries 977500
Mean 2.622
RMS 1.432
10^4
10^3
10^2
10
1
0
5
10
15
20
25
30
p [GeV/c]