Posted by StefanoSpataro on Fri, 18 Apr 2008 09:27:07 GMT
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Hello,
I attach the plot for MVD dE/dx versus momentum, where:

MVD dE/dx is the total energy deposited in MVD strip/pixel (MvdHits, no MC) divided by the number of MVD strips/pixels fired -> no correction for thickness or angle of the track inside the sensor

momentum is the reconstructed momentum using reco hits, so TpcCluster and MvdHit, calculated by lhetrack.

Here the plot for GEANT3

and for GEANT4

The plots were generated with Box generator, uniform in p [0,1 GeV/c], theta [20°,120°] and phi [0°,360°]. I have generated separately protons, kaons pions and electrons.

You can see that he momentum reconstruction seems to stop below 100-150 MeV/c, but it depends also on the particle type.

Second, you can see that in "kaon" events there is a structure in the pion region, most probably connected to kaon decays.

Third, electrons have different energy loss in G3 and G4!!!
Here you are the direct comparison:

In Geant3 electrons are losing more than twice the energy lost in Geant4. In Geant4 we have a MIPS point similar to the one of the pions, while in G3 it seems that we could use MVD to discriminate between pions and electrons

However, I remember you the dE/dx plot for STT done with geant3 (that I have also showed at CHEP), and even there the electrons stayed much higher than pions.
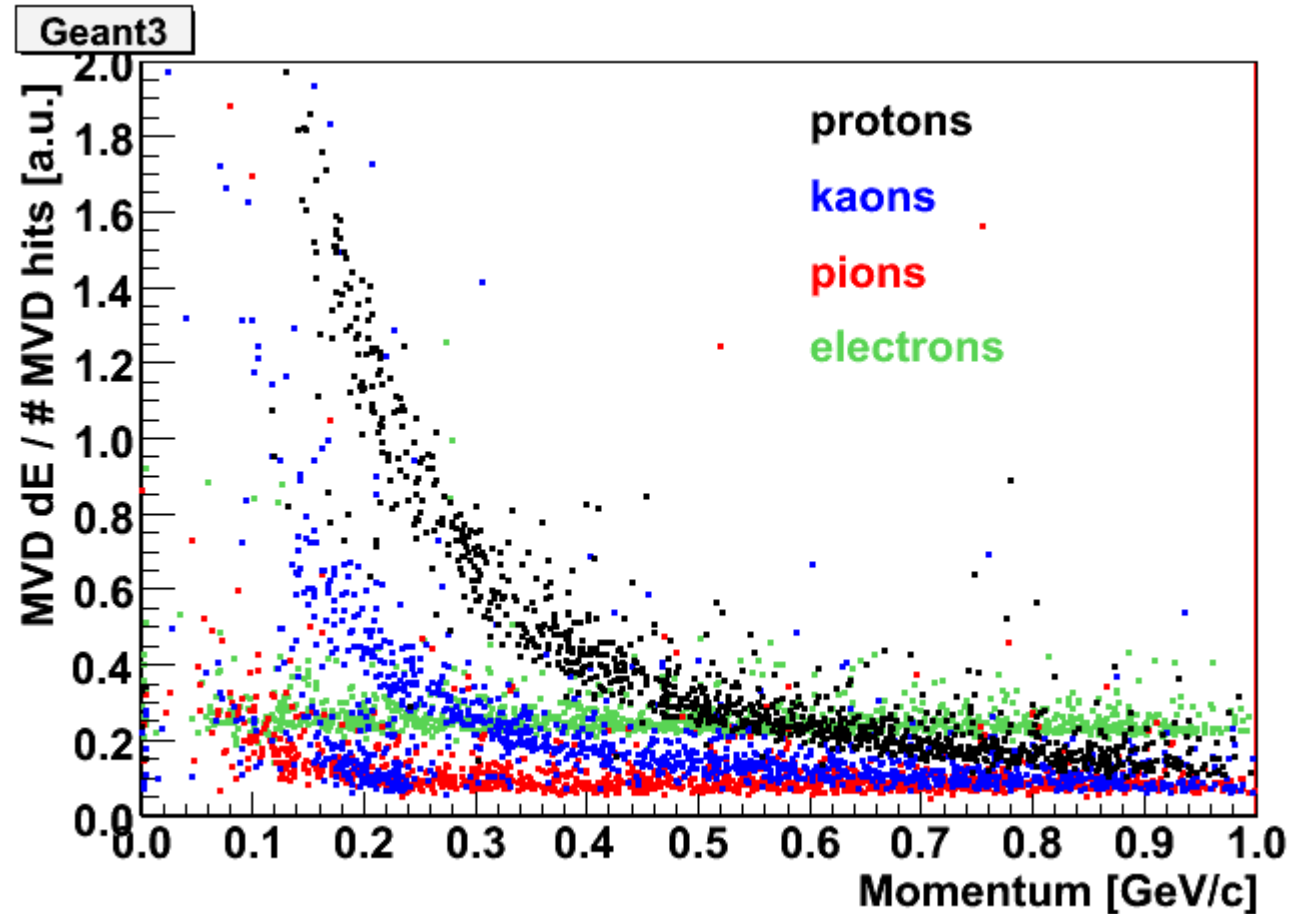
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But from dE/dx plots on tpc of the data particle booklet (page 269), it seems G3 is closer to reality...
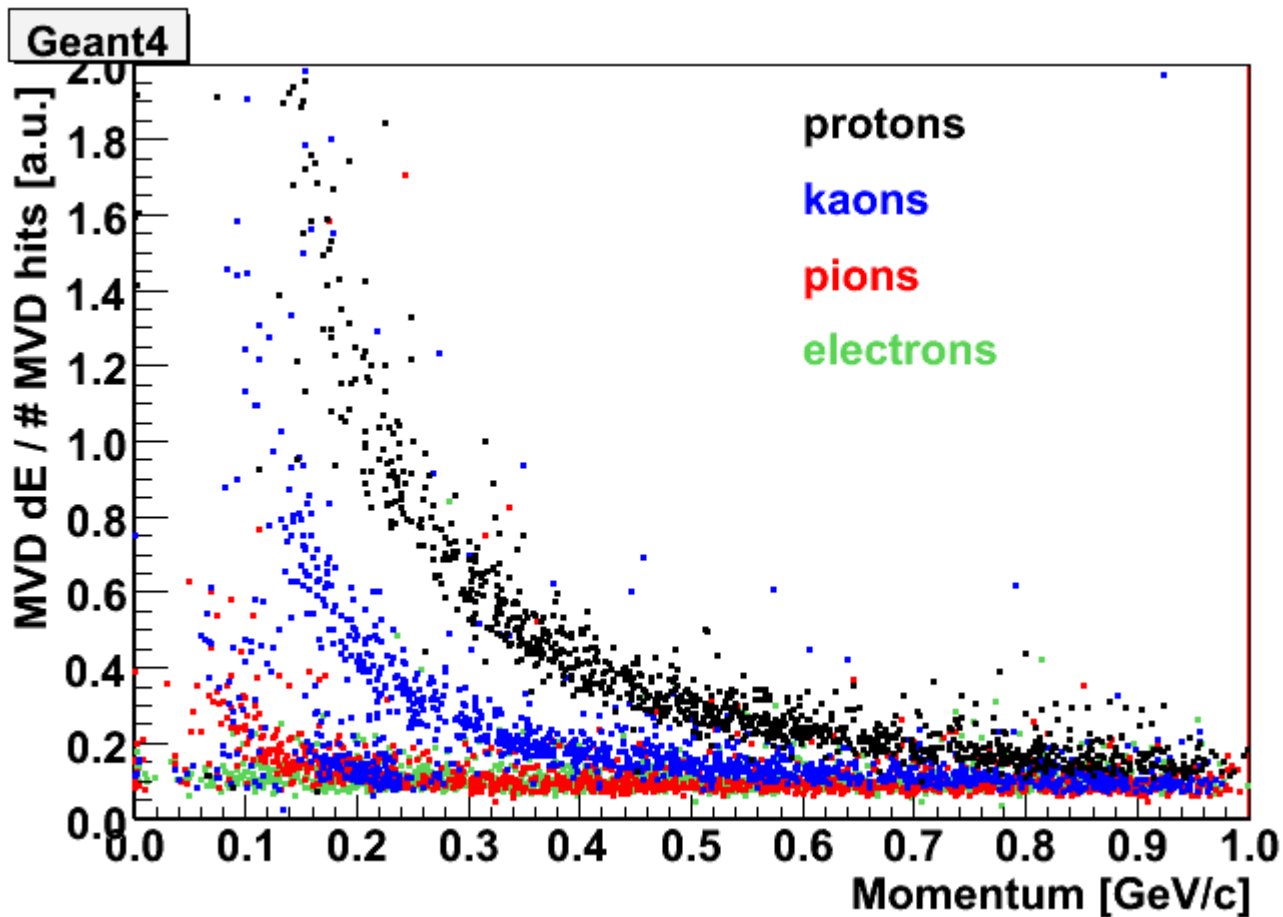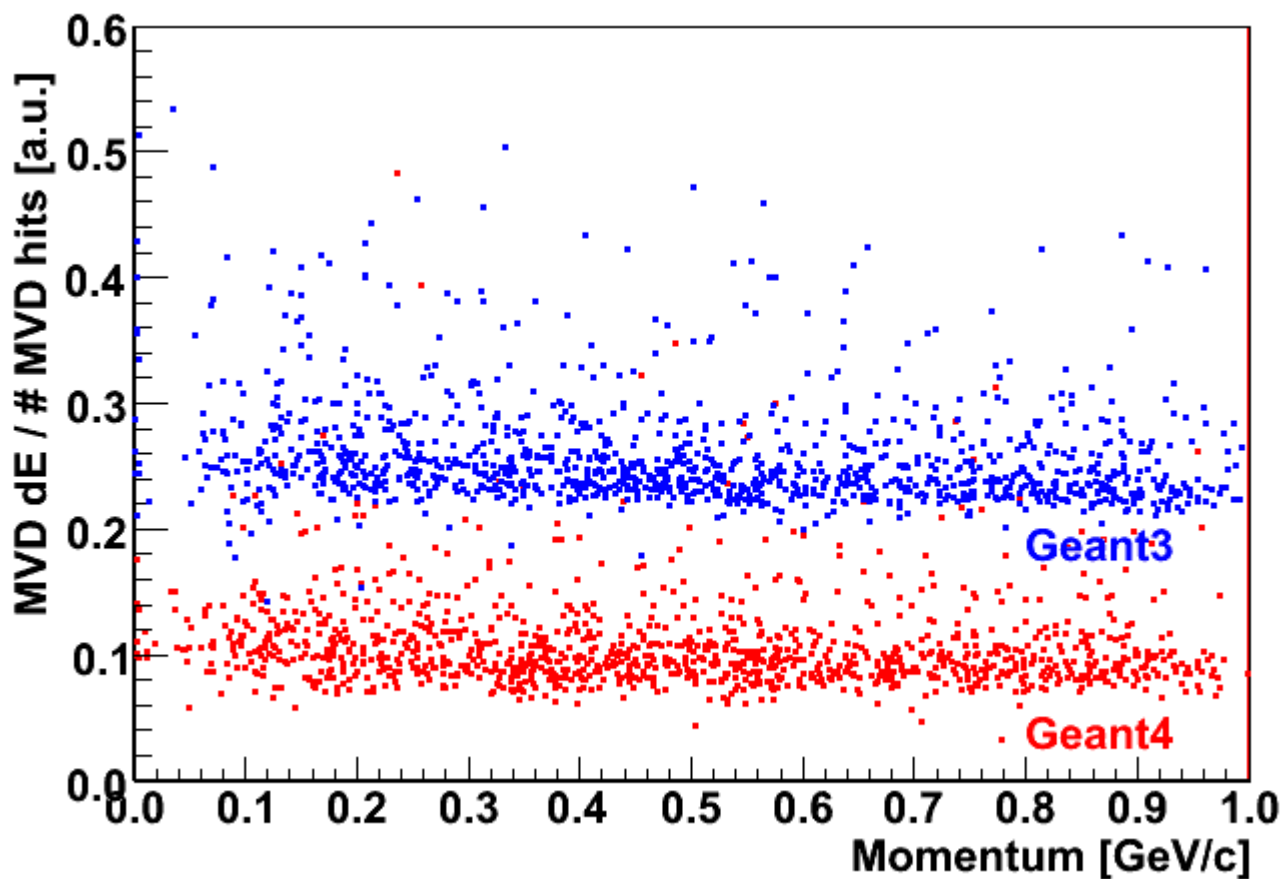
So... another problem of G4?

File Attachments

3) MVD_dedx_e_comp.gif, downloaded 1236 times

4) stt_dedxp.gif, downloaded 1143 times