Some results from Tracker standalone simulation:
HoneyComb effect on hit multiplicity

Beam Test VRVS meeting

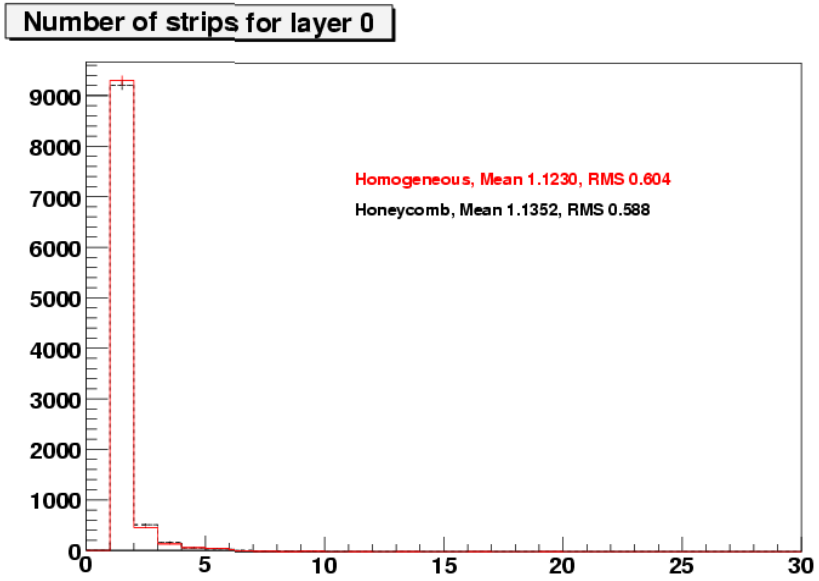
May 9, 2007

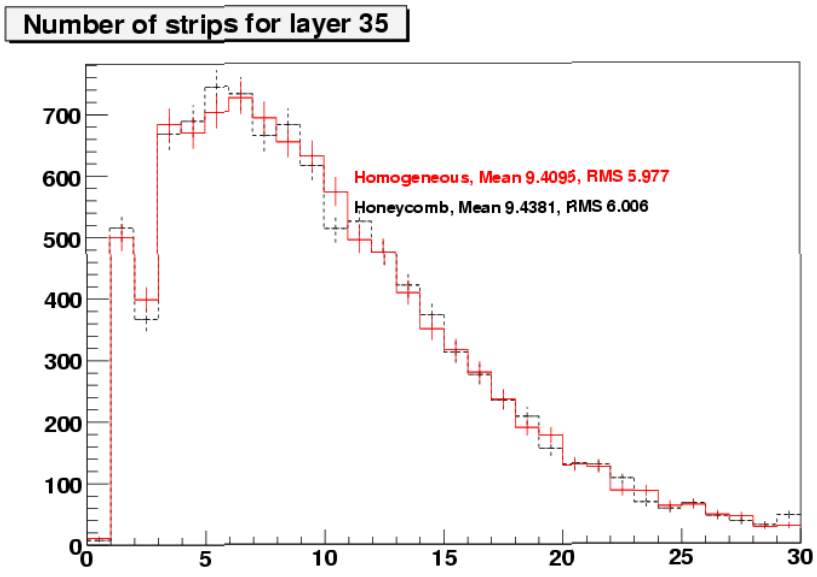
Introduction

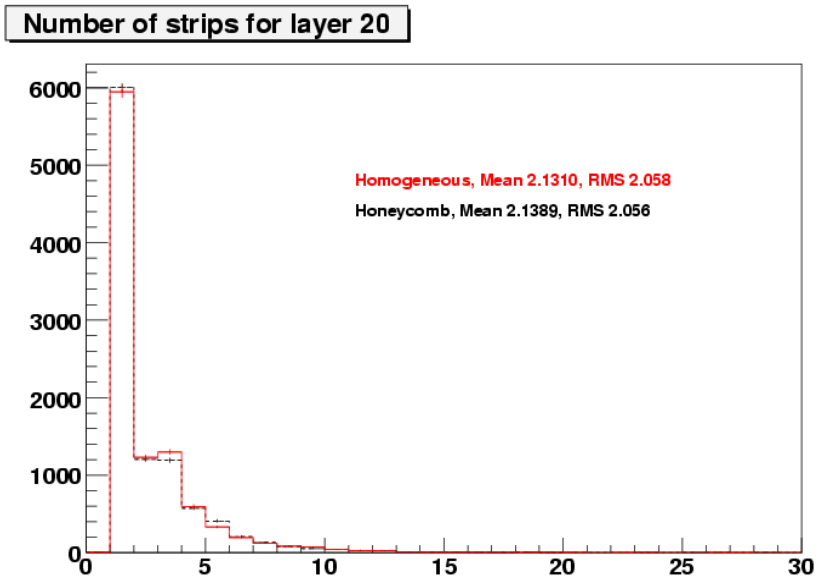
- G4 standalone simulation
  - Johan code for the honeycomb
  - Franz code for digitization
- One tower only, as close as possible to the real tkr
- Try to investigate the differences between HoneyComb and homogeneous core in few configurations:
  - 10 GeV e-, standard
  - 1 GeV e-, standard
  - 1 GeV e-, penelope model (low energy particles?)
  - All vertical beam, 3 cm beam spot, 5 mrad divergence

Number of hits per plane: 10 GeV

- The number of hit (no clustering) in a plane is plotted for both HC and Homogeneous model
- These plots are an example...
- No significant differences seen in all three configurations

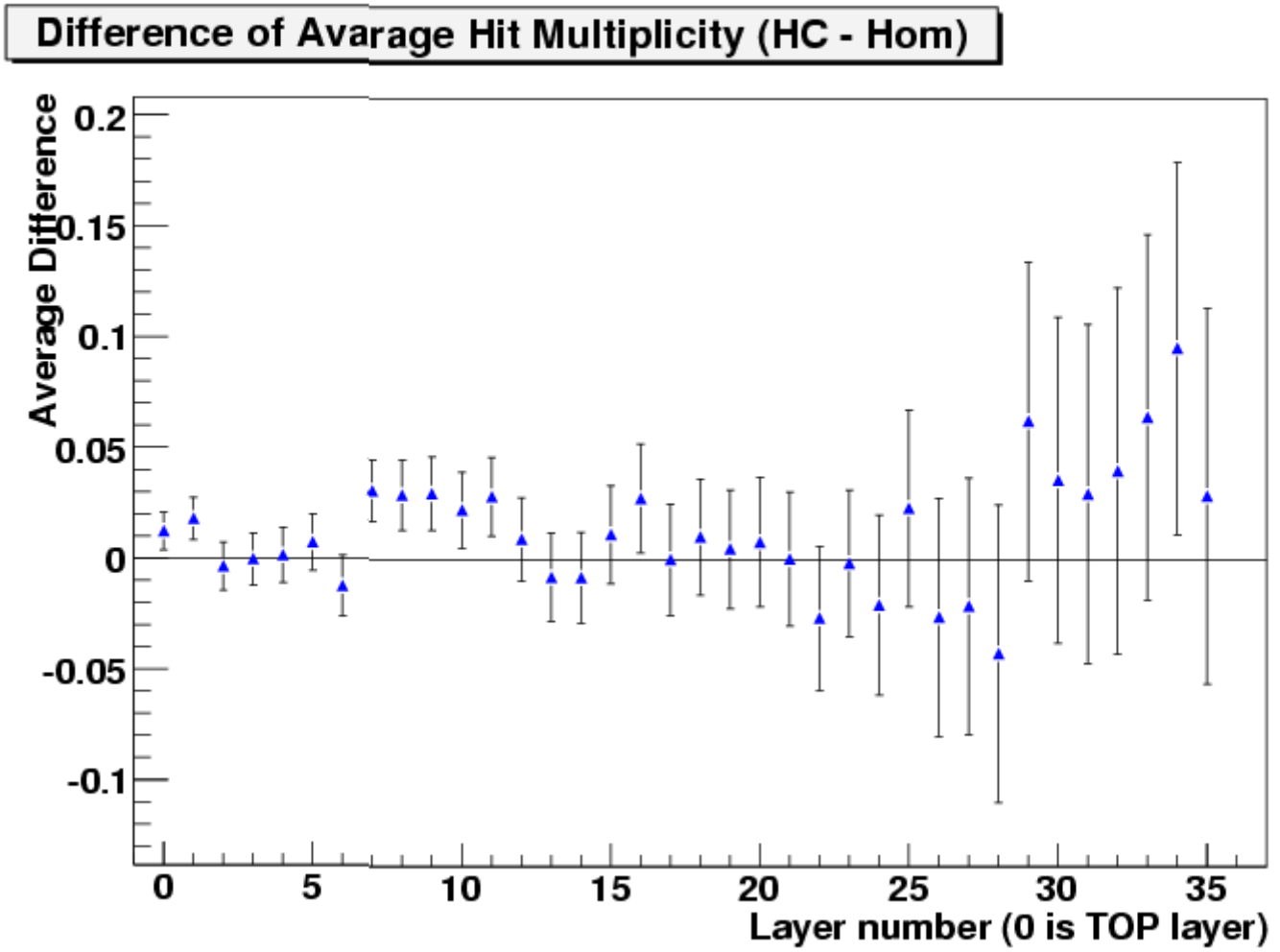






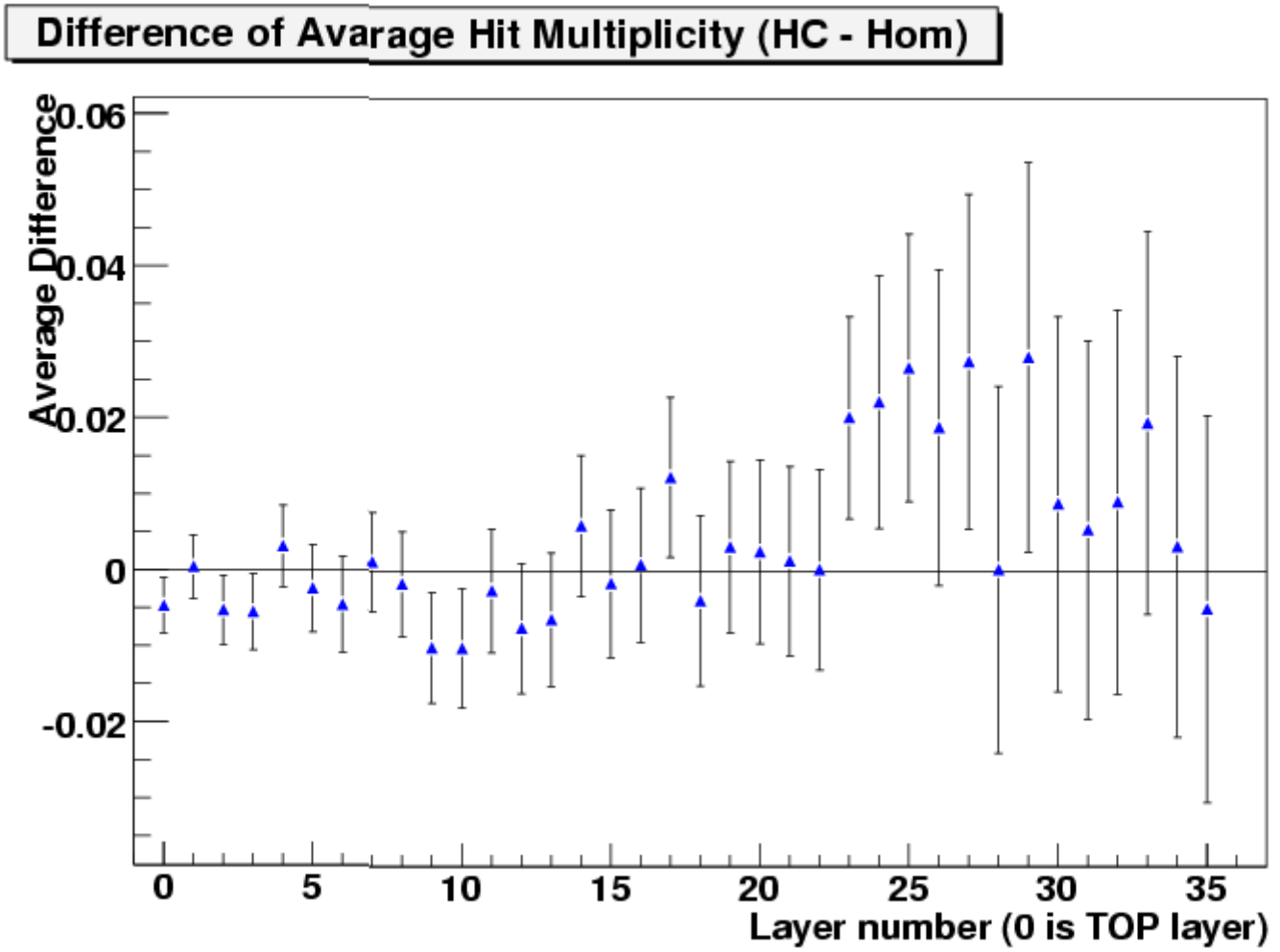
HC mean – Hom mean: 10 GeV

- For every plane the quantity “HC mean – Hom mean” is evaluated
- All values are compatible with 0 (within statistical fluctuations)
- There is no clear trend



HC mean – Hom mean: 1 GeV

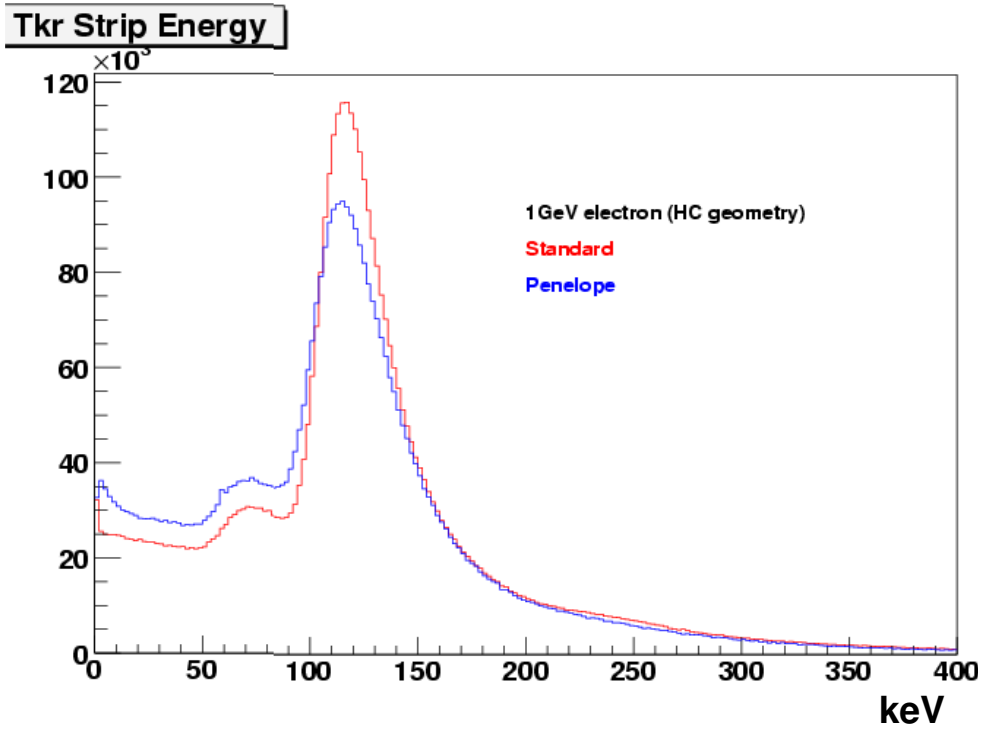
- Same algorithm showed in previous slide
- No significant differences between HoneyComb and homogeneous core geometry.



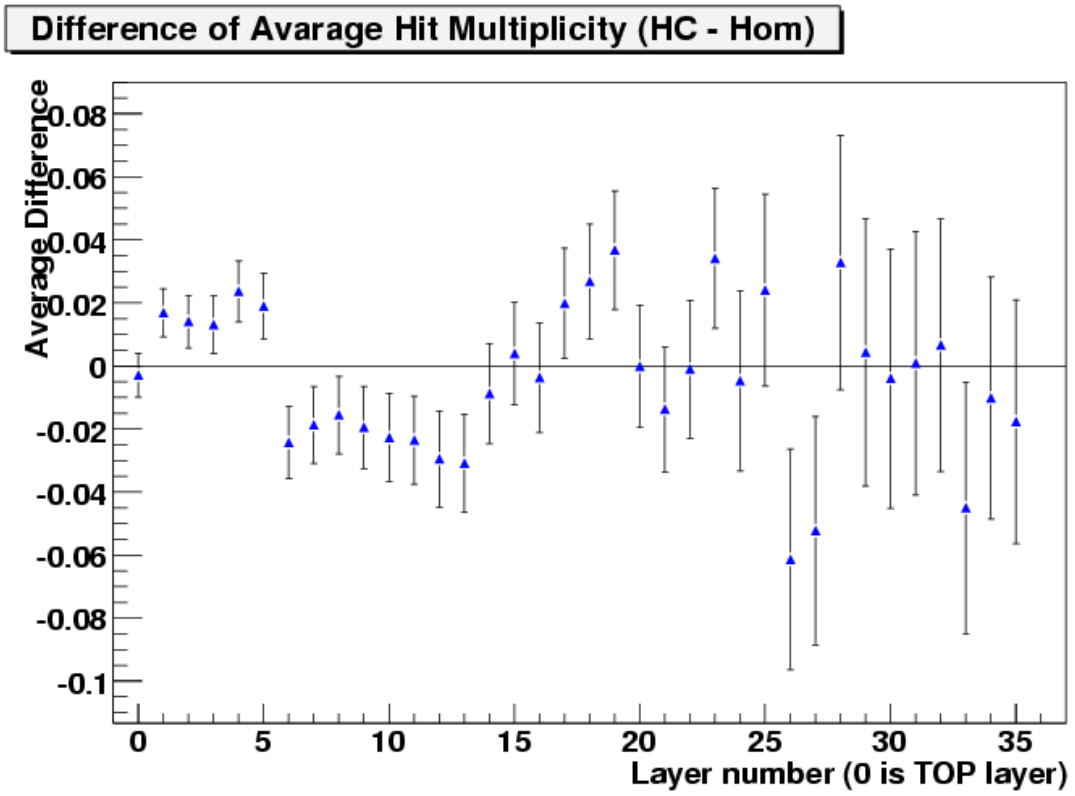
HC mean – Hom mean: 1 GeV "penelope"

- Do we expect any differences now?

We see that the Penelope model tend to prefer a lower energy



But the effect is too small to have an impact on the number of hits



Conclusions

- No significant differences between HoneyComb and Homogeneous geometry
  - At least in the these configurations
- Some questions still open:
  - Can some G4 parameter have any impact?
  - Should we try other runs (i.e. change energy, particles, beam angle)?
  - Should we try to compare this standalone simulation with the BTR? (not that easy...)