

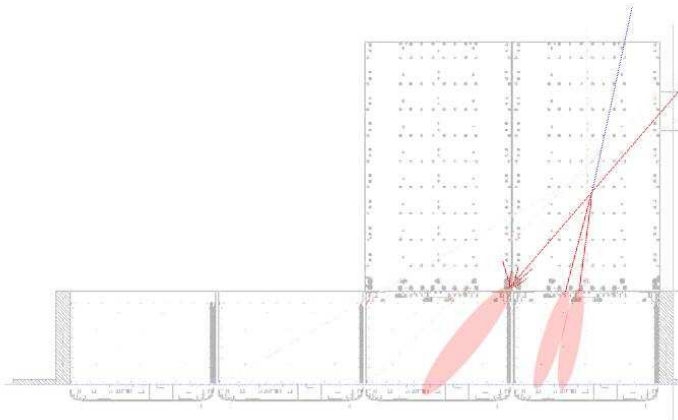
GLAST CERN 2006 Beamtest



Standard Mips in the Tracker

Johan Bregeon (INFN-Pisa)

Paris Beamtest meeting, November 14th 2006



Data and MC

Data

- Cosmic rays : 3300000645 (Pisa) reprocessed with good ToT calibration
- 6GeV proton beam : 700001423 reprocessed with good ToT calibration

MC

- surface_muons with BTR_v4r0909p11
- MC-184 for protons

Standard Cuts

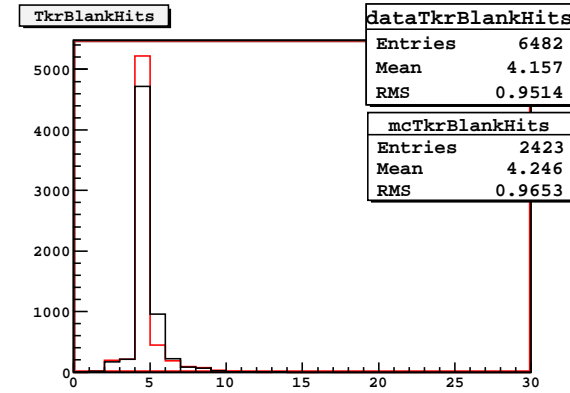
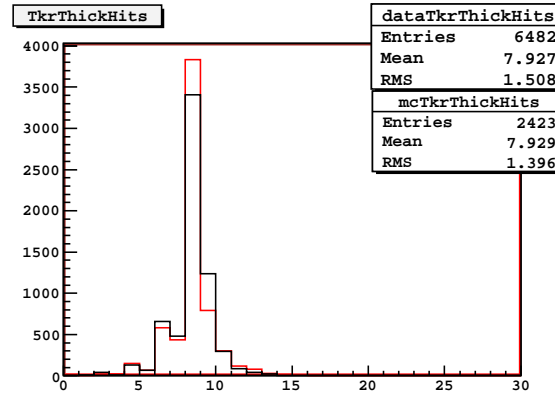
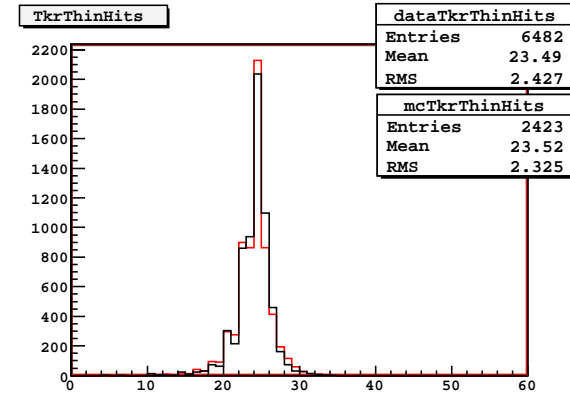
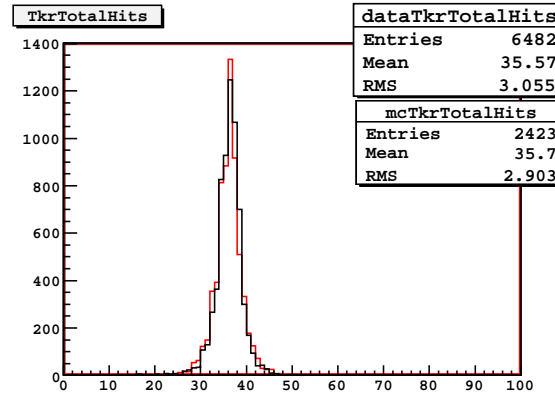
what Leon told me

- × $\text{TkrNumTracks} == 1$
- × $\text{abs}(\text{Tkr1ZDir}) > 0.9$
- × $\text{Tkr1KalEne} > 500$
- × $\text{CalCsIRLn} > 4$
- × $\text{Tkr1FirstLayer} == 17$
- × $\text{Tkr1LastLayer} == 0$
- × $\text{abs}(\text{CalMIPRatio} - 1) < 0.2$

Cosmic Muons : 330000645 (1)

Data - MC

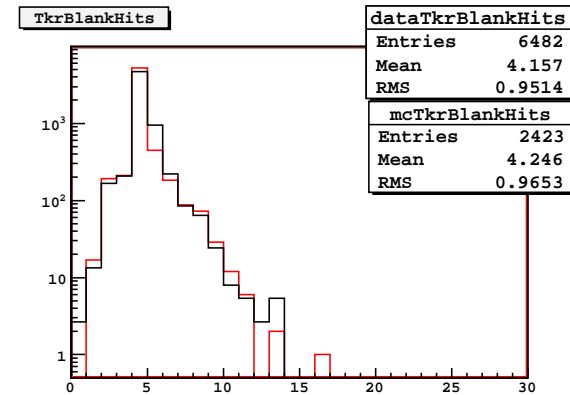
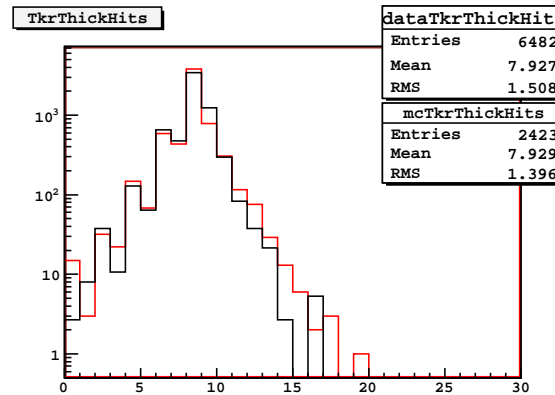
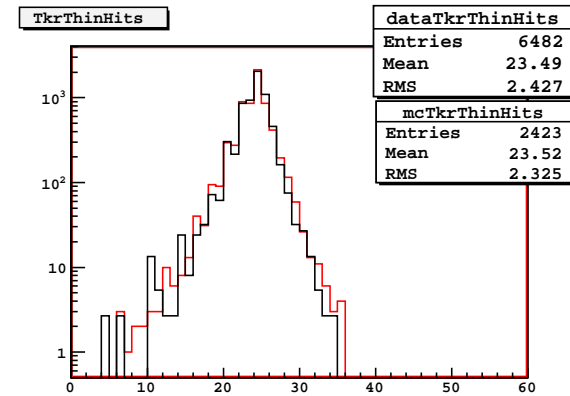
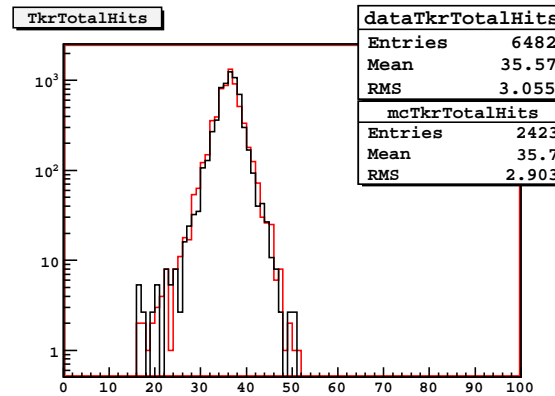
- Excellent agreement
- for all planes



Cosmic Muons : 330000645 (1)

Data - MC

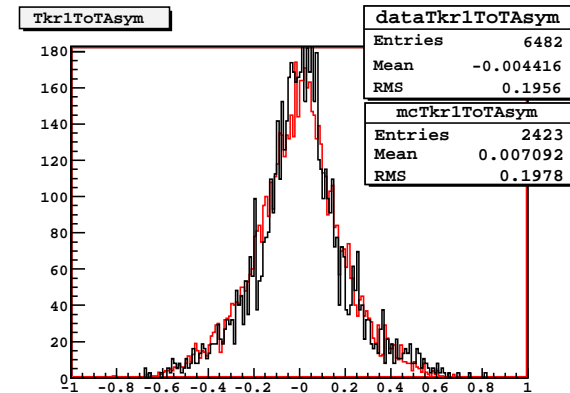
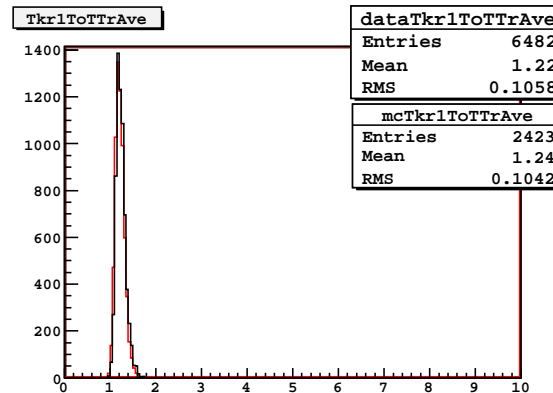
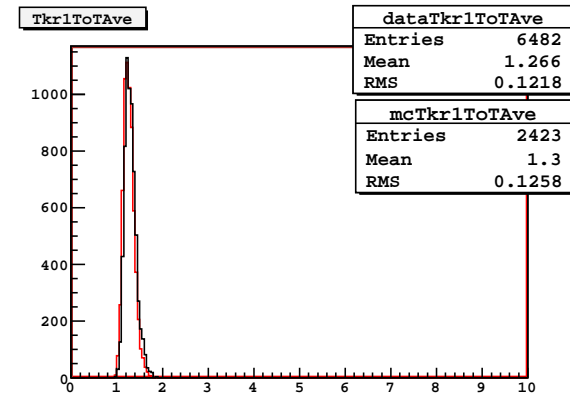
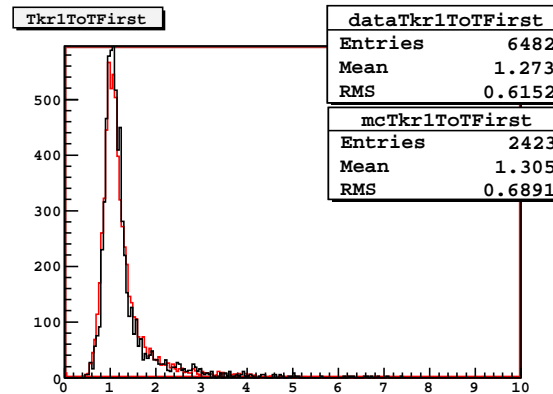
- Excellent agreement
- for all planes
- on some orders of magnitude



Cosmic Muons : 330000645 (2)

Data - MC

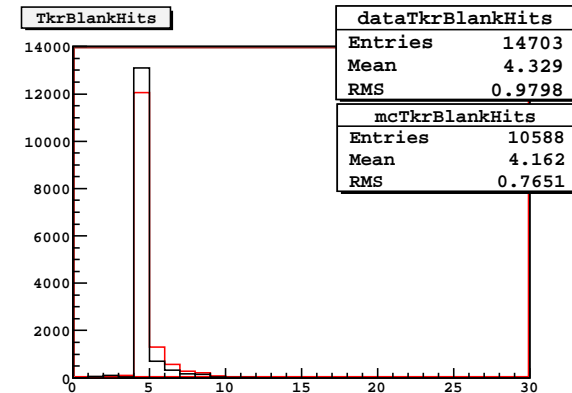
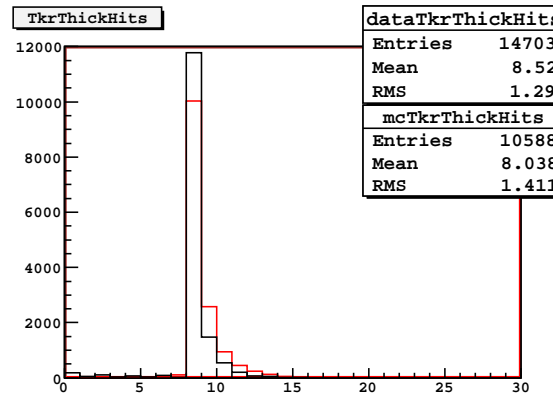
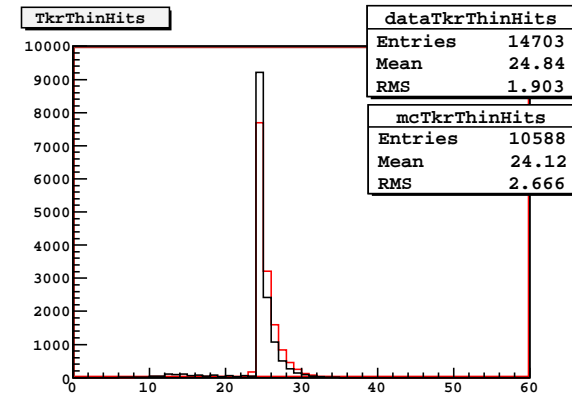
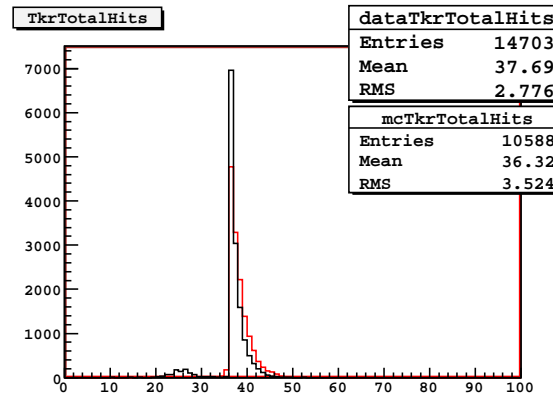
- Very good agreement on ToT too
- for all quantities



6GeV/c Protons : 700001423 (1)

Data - MC

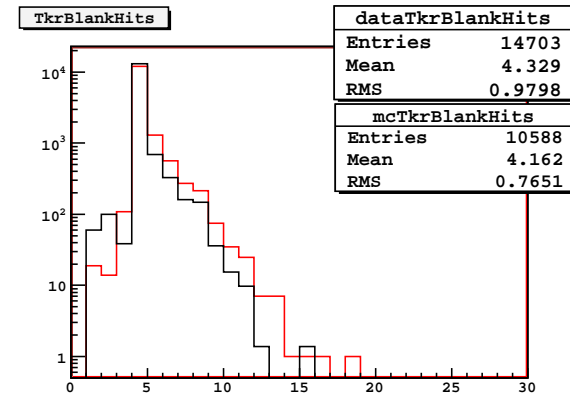
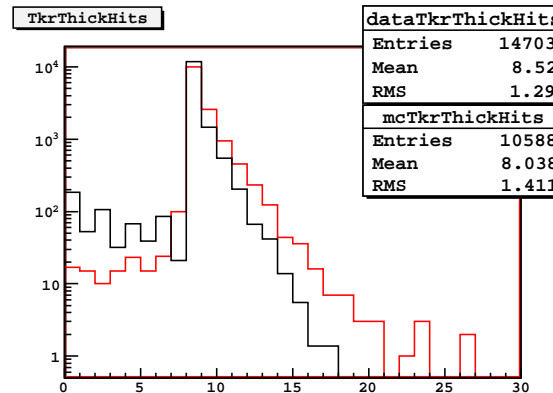
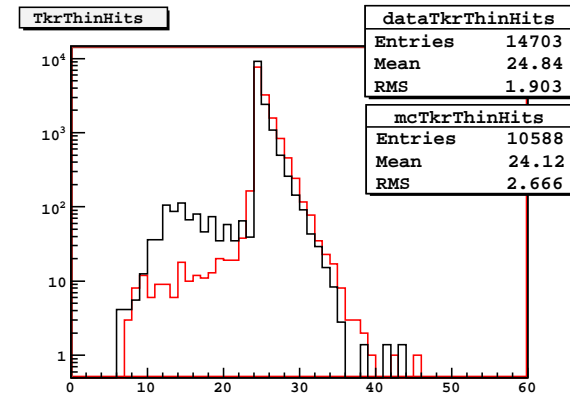
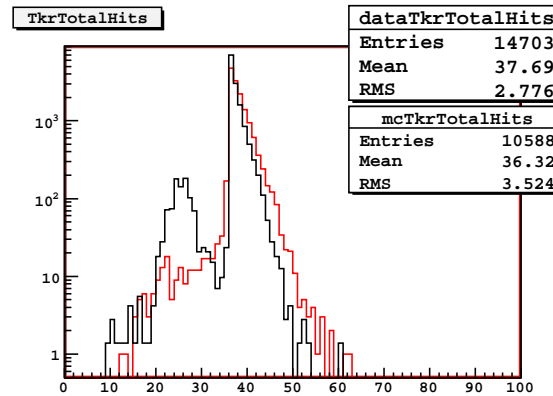
- some events in gaps
- but very good agreement anyway !



6GeV/c Protons : 700001423 (1)

Data - MC

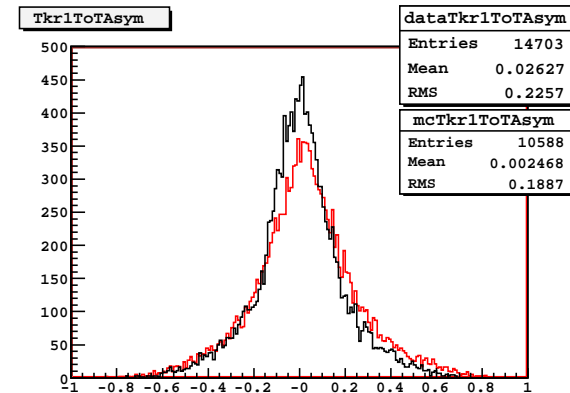
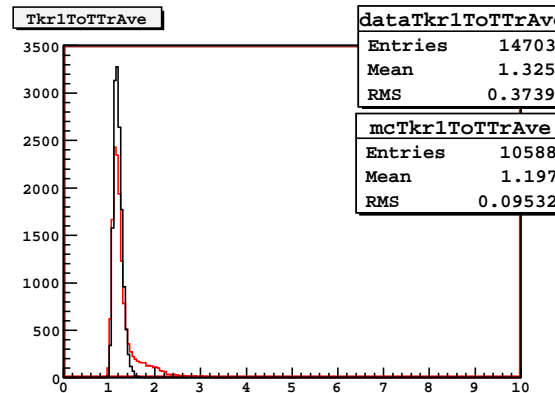
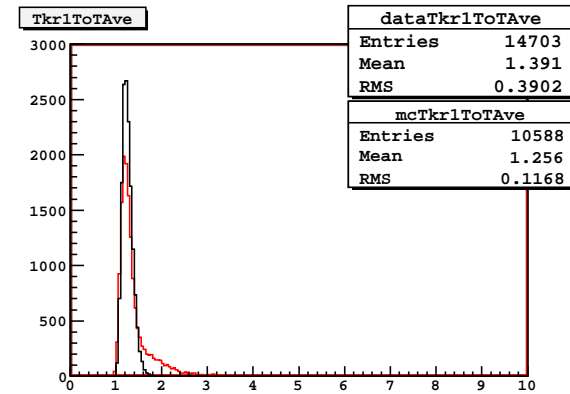
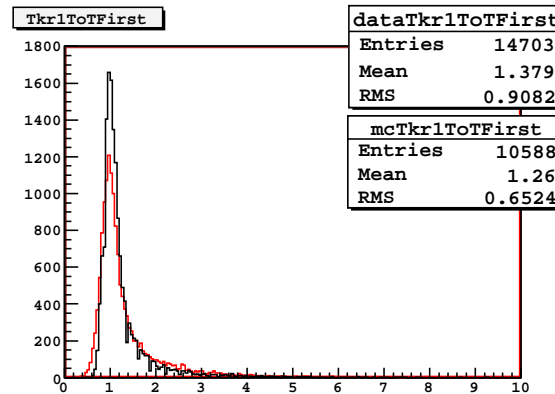
- some events in gaps
- but very good agreement anyway !
- unexpected tails



6GeV/c Protons : 700001423 (2)

Data - MC

- Tkr1 ToTFirst and Tkr1 ToTAsym is very good
- Others show unexpected tails



preliminary conclusions

- Good agreement using standard mip cut on Merit
- Need to understand where the trick is !

preliminary conclusions

- Good agreement using standard mip cut on Merit
- Need to understand where the trick is !

What is different ?

- Working on the MeritTuple, not on the BTtuple.
- Cuts are more restrictive (but I was selecting mips too).
- ToT is calibrated but that has no impact on number of Hits.

more conclusions

What are really these variables ?

● it looks like these *hits* are actually clusters

- **TkrTotalHits** : Deprecated. Use TkrSurplusHCInside instead
- **TkrSurplusHitsInside** : Number of clusters inside an energy- and angle-dependent cone centered on the reconstructed axis of the best track and starting at the head of track 1. Only hits in layers with at least one x and one y cluster in the tower are counted.
- **TkrThinHits** : Number of clusters in the above cone in the thin-converter layers.
- **TkrThickHits** : Number of clusters in the above cone in the thick-converter layers.
- **TkrBlankHits** : Number of clusters in the above cone in the no-converter layers.

● clusters in the first track ? if so...

- ⇒ we already saw that parameters for the first track are well reproduced and this is consistent with the svac analysis.

My cuts vs Leon's cuts

My Cuts

- × TkrNumTracks==1
- × Abs(dataVtxZDir)>0.95
- × 1Hit per plane for Tkr Top Layer
- × 1Hit per plane for Tkr Bottom Layer
- × TkrTotalHits[3]>=36 hits
- × CalNumHit[tower]==8
- × $\Delta_{time} \geq 1ms$

Leon's Cuts

- × TkrNumTracks==1
- × abs(Tkr1ZDir)>0.9
- × Tkr1FirstLayer==17
- × Tkr1LastLayer==0
- × Tkr1KalEne>500
- × CalCsIRLn>4
- × abs(CalMIPRatio-1)<0.2