

Cosmic Rays @ the ND

Light output comparison between data and MC

Outline

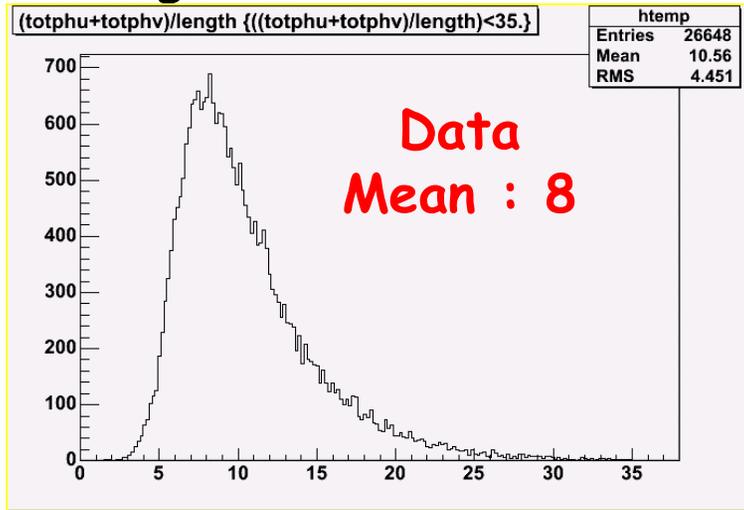
- Comparison between data and MC on
 - Muon track PH per plane
 - Muon track digits per strip
- Summary On-going work

Data and MC used

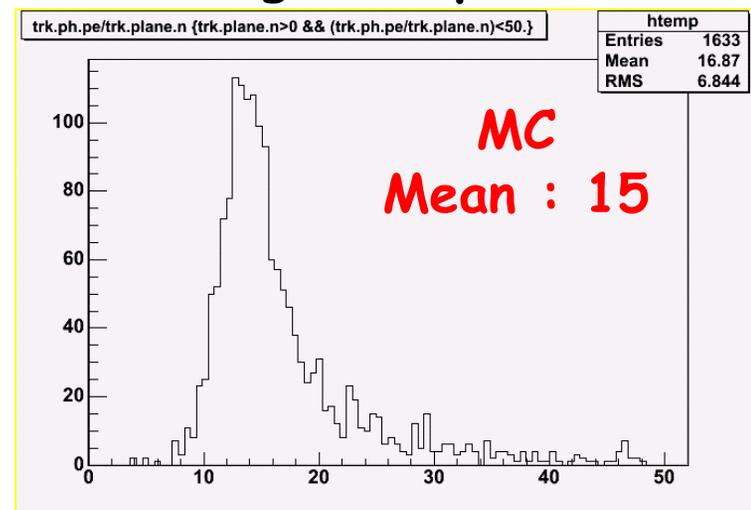
- The data I used is a recent Cosmic run with 26000 tracks
- The MC I used is an overlay ND MC file with the "new" tuning from Nathaniel for the Calibrator (684 instead of 1104).
- I cut on the track length (tracks to have more than 30 planes) so as to compare "similar" things between data and MC.

Cosmic Run - Track Characteristics PH and digits per strip... OLD

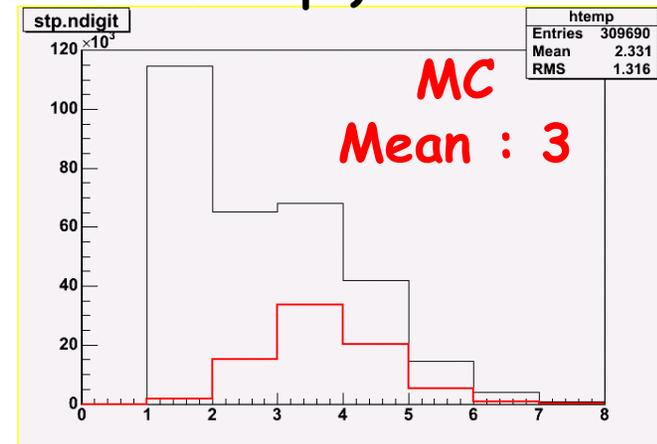
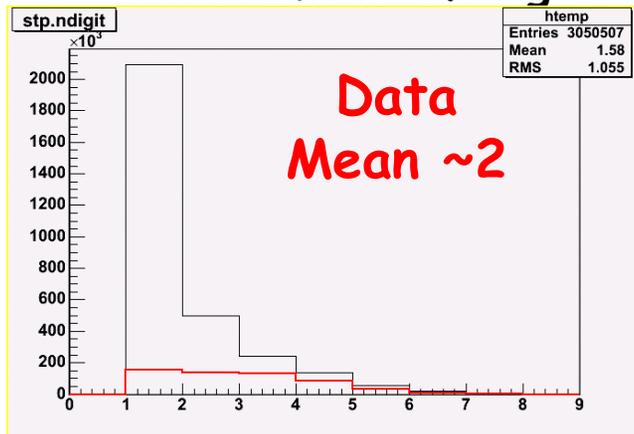
Average PEs track hit



Average PEs per track hit



Number of digits per strip (red track strips)

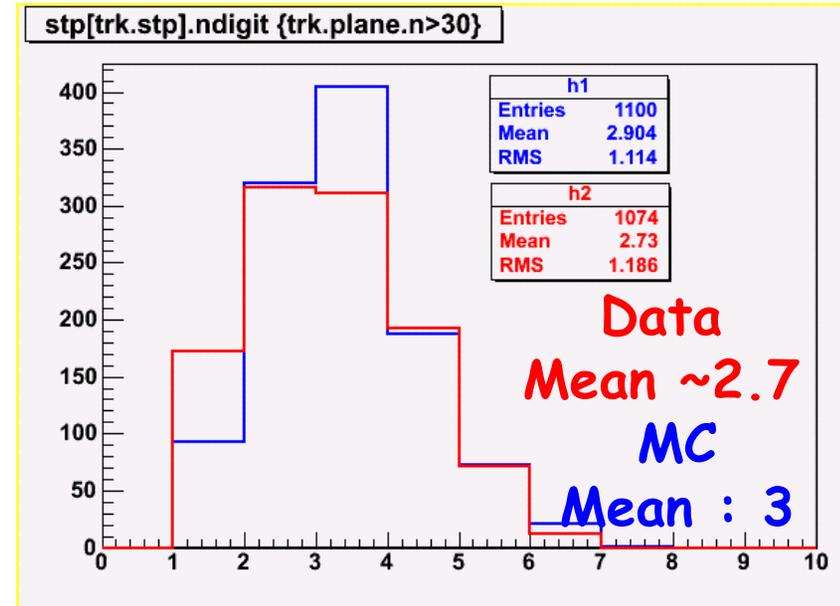
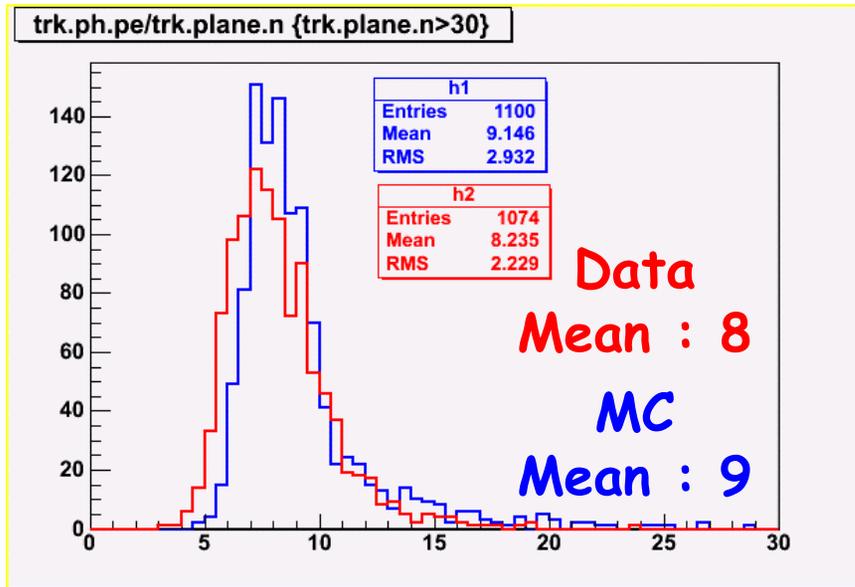


- The number of digits that create each track strip in MC events is ~ 3 with the number of track strips with 1 digit being highly suppressed as compared to real DATA.
- That affects also the "average PE's per plane" distribution which is also very different between data and MC.
- This is something that needs to be looked at carefully and understood.

Cosmic Run - Track Characteristics PH and digits per strip... NEW

Average PEs per track hit

Number of digits per strip (red track strips)



- Now things look much more consistent between data and MC with the MC producing slightly more light than the actual data which results in slightly larger number of digits per hit strip.

Summary -Ongoing work

- The number of digits and the PH distribution of the track hits now looks more similar between data (cosmics) and MC for the ND
- I will try the new numbers introduced by Nathaniel
- Suggestions welcome...