

Ftksim status

October 14, 2008
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Structural changes

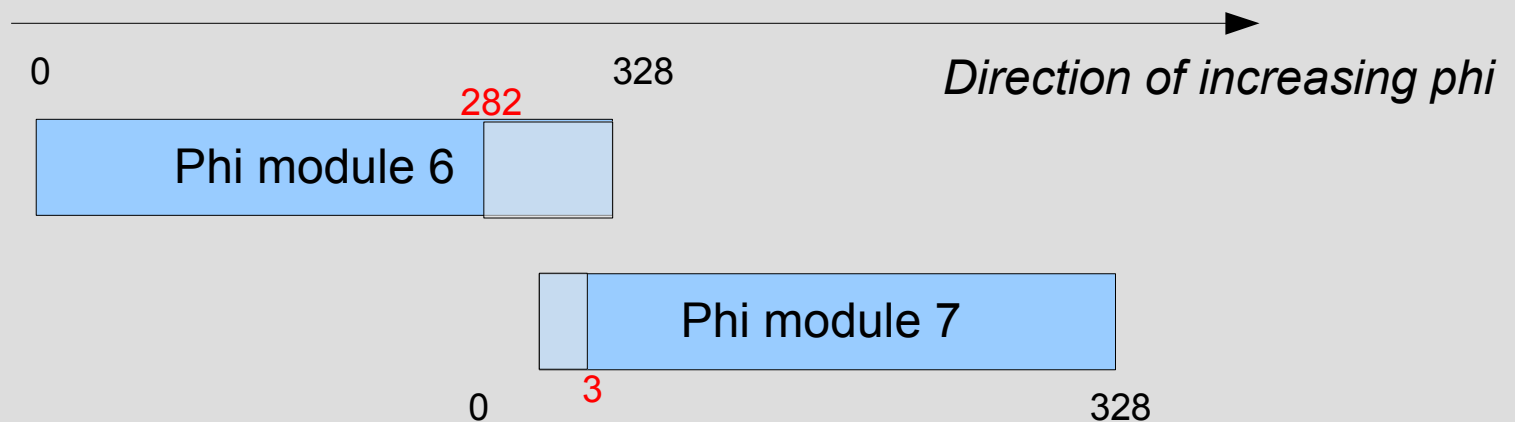
- Separation of innermost two rings in forward SCT disks
 - *attrackUtilsM.c*
 - Start taking into account “eta” in etacode encoding:
 - $\text{Etacode} = (\text{eta}+1)*20 + \text{ASIDE}*10 + \text{section}$
 - $\text{ModuleId} = \text{mod-phi}*1000 + \text{etacode}$
- New pixel superstrip encoding and partitioning in z
 - *ss_hit.c, read_routines.c: ssmmap_rd()*
 - $S_s = \text{FLOOR}[(328*\text{phimod} + \text{local phi})/\text{PHI_Width}] * 200$
 - $S_s += \text{FLOOR}[(144*\text{etaloc} + \text{local eta})/\text{ETA_Width}]$
 - $\text{Etaloc} = 0..12$ for barrel; 14,15 ASIDE, 17,18 CSIDE
 - *Note: SCT keeps old SS encoding!*
- Ftksim changes in am_in() to work with 2D partitioning
 - Still some problems – see next page!

Ftksim procedure

- In a given a layer (0..10) and bank (0..7), we build a linked list of all hits:
 - Hit1(SS=10)→Hit2(SS=20)→Hit3(SS=20)→Hit4(SS=500)→ ... HitN
- The hits are pre-sorted by phi so that all hits that belong to the same SS are *bunched together*
 - Thus, to access all hits in a given SS, we can give pointer to starting hit & #hits in that SS.
- With pixel eta-partitioning, we can't just sort the hits by phi.
 - Instead, we rearrange the list in `am_in()` to achieve hit grouping by superstrips.

Remaining problem

- Spotted yesterday, so not fixed yet
- Recall SS computation:
 - $SS = \text{FLOOR}[328 * \text{phimod} + \text{locphi}] / 50 * 200 + \text{eta}$



- All hits in shaded area end up with $SS = 45$
- This is because $\text{width}=50$ doesn't divide 328
- It happens often thanks to module overlap!

Minor changes & plans

- 7L configuration
 - Changes to `pmap_rd.c` to parse 7L maps
 - Complete set of 7L maps that mask out stereo
- Increased MAXTRKOUT 2000 -> 5000
 - Even this limit is often reached in 10^{34} events
- Explicit checks in external hitwarrior
 - Affected: *hitwarrior.c*
 - If `#tracks` was too large, it crashed
- Once everything is tested, I can start merging to CVS (inc. Guido's statistics).

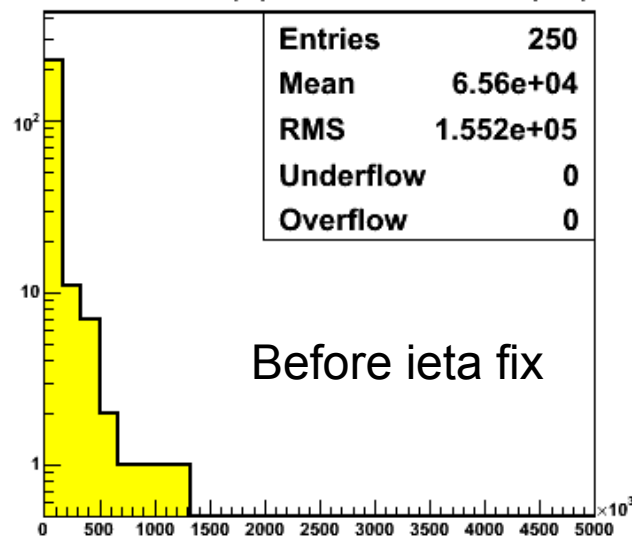
Effect of eta fix

- Recall: innermost two rings are now separated, reducing # combinations
- Plots below show #fits per events with nearly identical pattgen banks before & after fix
- Same 250 Whbb events @ 10^{34}
- 50x64 configuration; no eta partitioning.

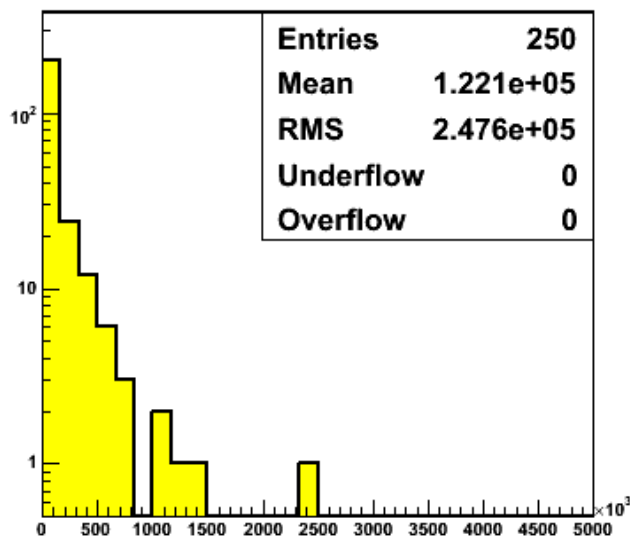
- Note: plots with eta partitioning are still running – sorry didn't finish before the meeting.

Barrel – almost no change
Slight increase after fix is probably due to hits in phi-overlap regions

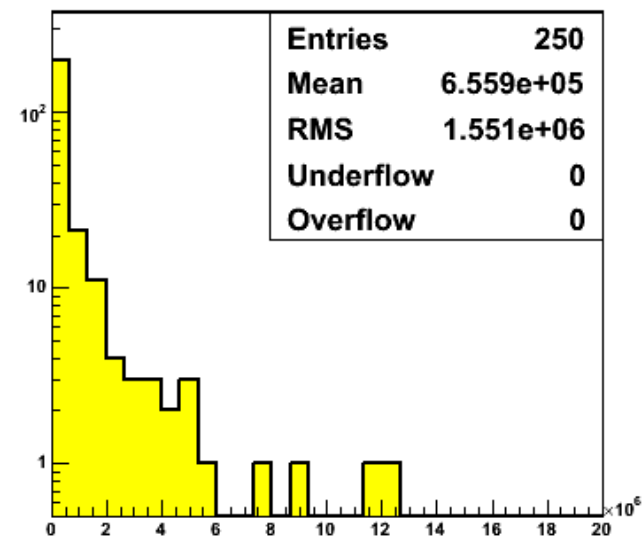
BARREL(1): fits per event(all)



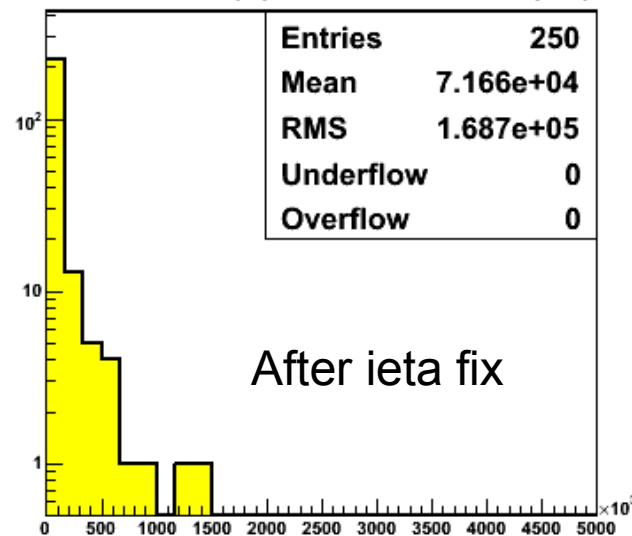
BARREL(1): flts per event(miss)



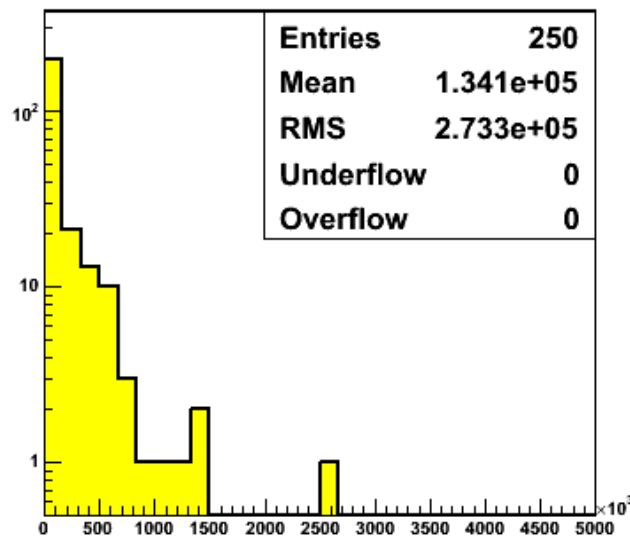
BARREL(1): flts per event(maj)



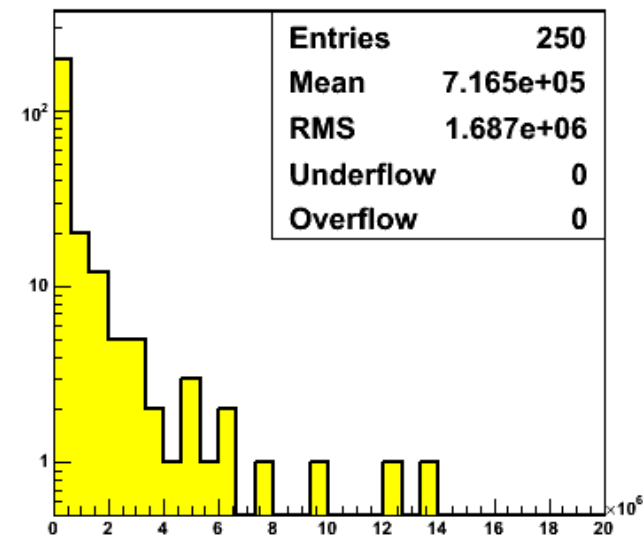
BARREL(1): fits per event(all)



BARREL(1): flts per event(miss)

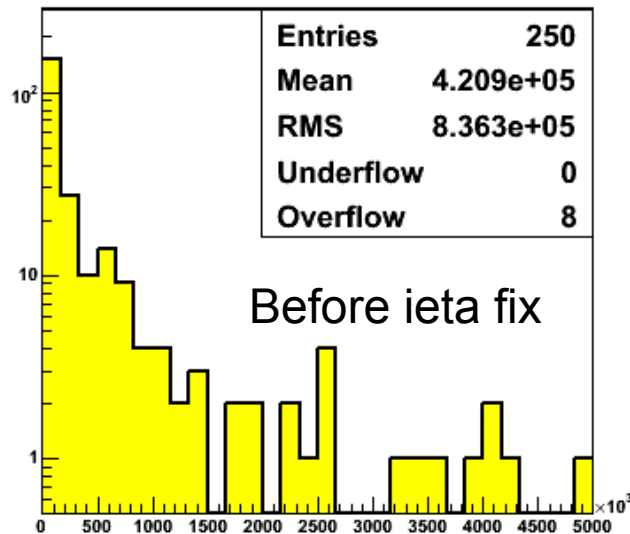


BARREL(1): flts per event(maj)

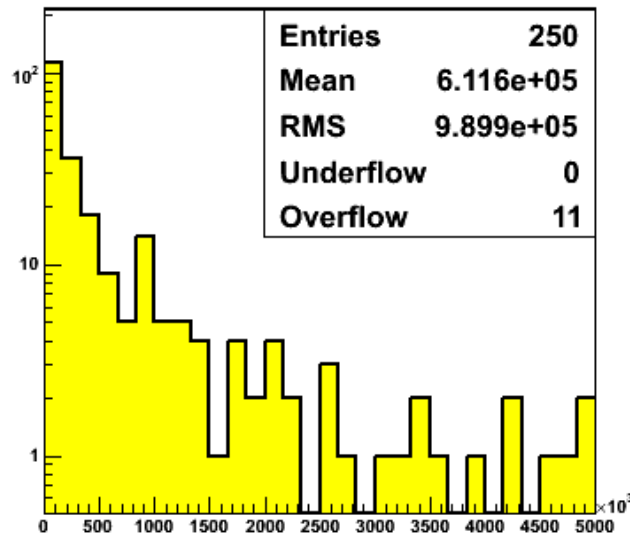


Endcap – some reduction in #fits

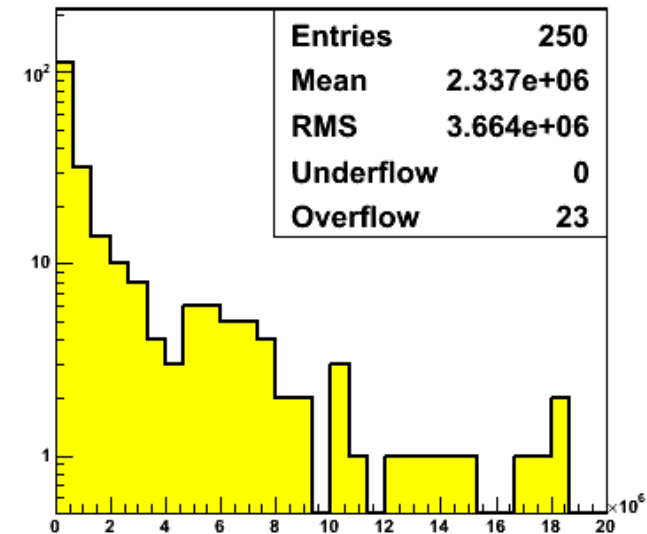
ENDCAP(1): fits per event(all)



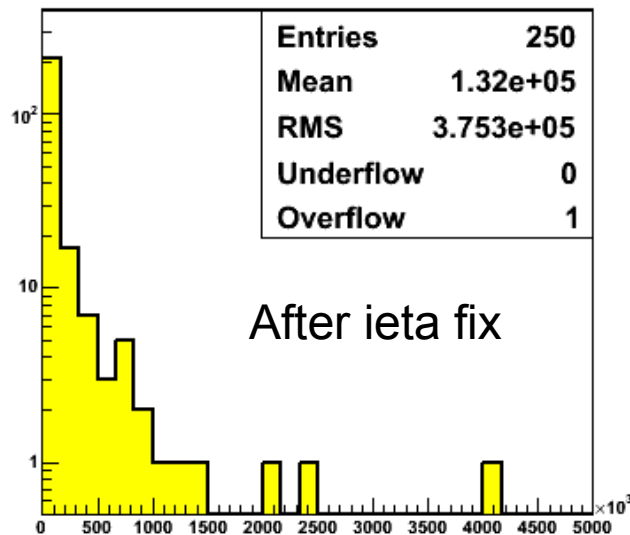
ENDCAP(1): flts per event(miss)



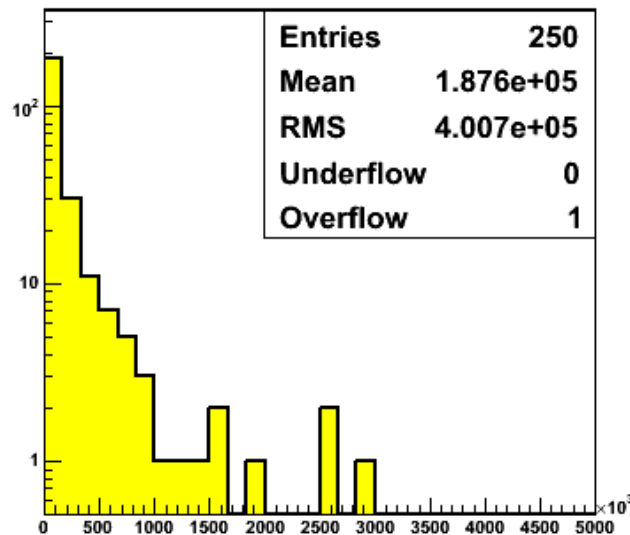
ENDCAP(1): flts per event(maj)



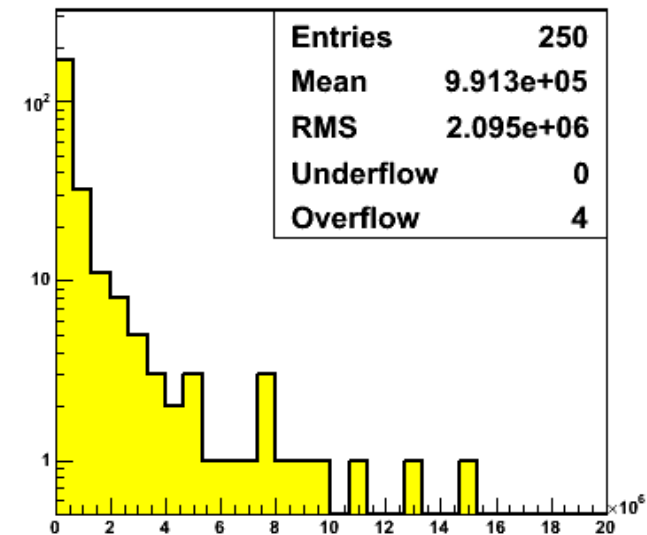
ENDCAP(1): fits per event(all)



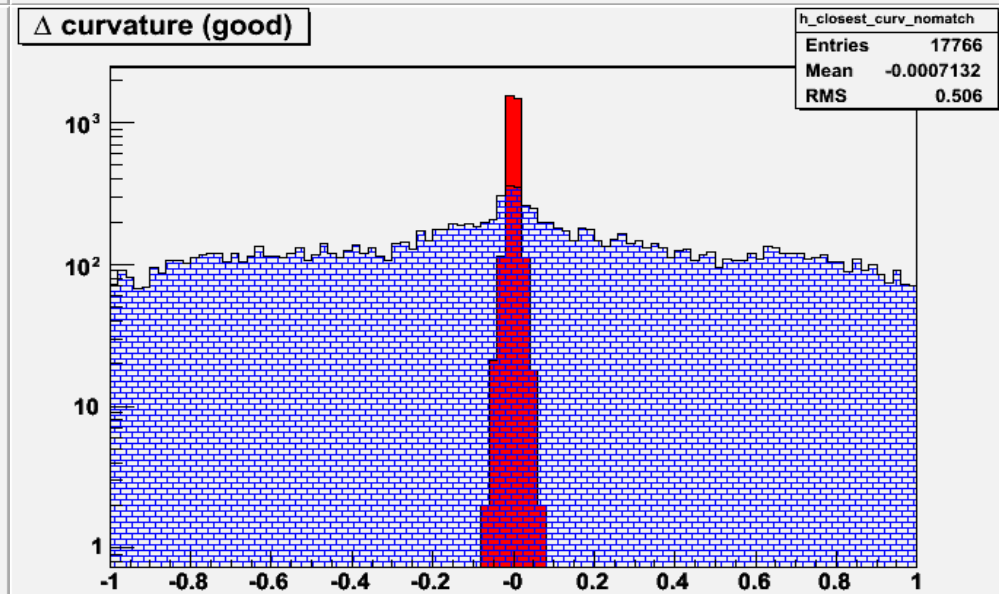
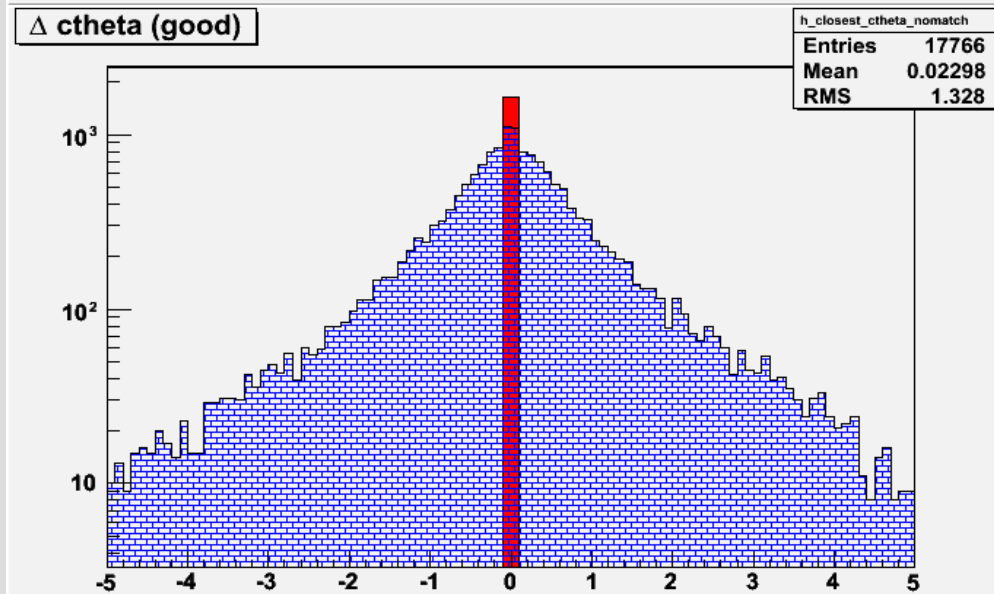
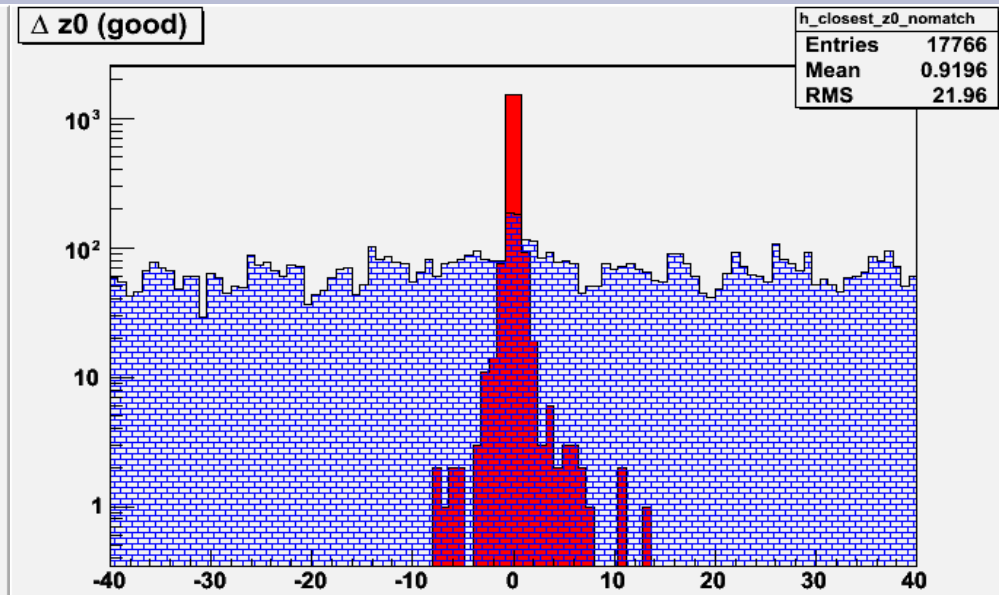
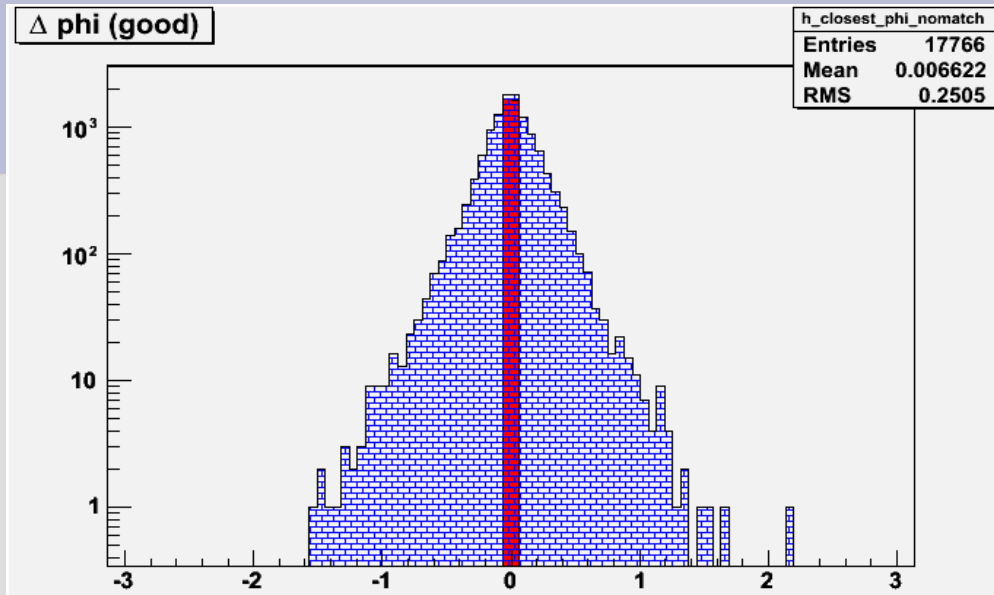
ENDCAP(1): flts per event(miss)



ENDCAP(1): flts per event(maj)



Distance to closest matched/unmatched truth track



Δd (good)

h_closest_d_nomatch	
Entries	17766
Mean	0.0009003
RMS	0.03743

