

FTK monthly meeting

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Status

- Last week, I introduced a stupid bug (in CVS)
 - It worked with single muons, so I committed
 - But with Whbb – there were too many fits!
- Took a while to narrow down
 - Thought problem in `am_in()` being too slow
 - But: simply missing phi-module information in `ss`
- All CASTOR patterns are wrong
 - Sectors, constants, slices are good
- Fixed locally, but not in CVS (pending tests)
 - Regenerating pattgen banks (almost done)
- Next page for details

Ss encoding revisited

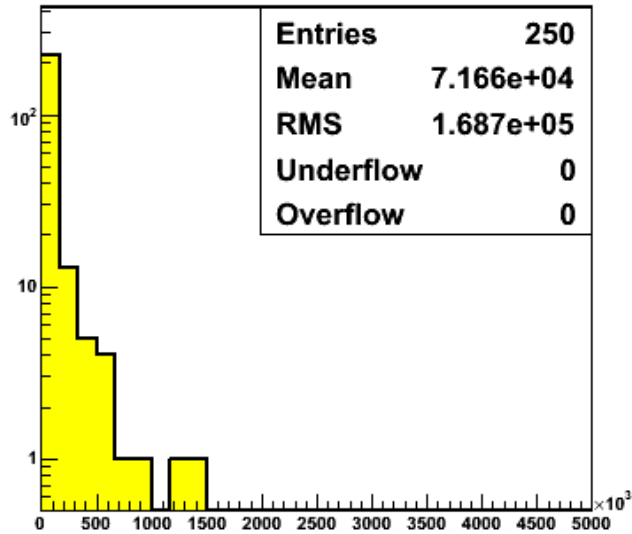
- We need arrays addressed by “ss”
 - By RAM, ss is limited to ~18 bits, rather than 32
- Attempted hardware-like bit packing:
 - Francesco's idea; avoids module overlaps
 - 7 bits for ieta (module eta, section, isBarrel)
 - 6 bits for module phi location (0..54) – missing
 - 4 bits for phi-location within module (up to 15 ss)
 - 4 bits for eta-location within module (up to 15 ss)
 - MIN TOTAL = 21 bits – too much
- For now, reverted to the old scheme
 - Allows closer packing
 - E.g., 7 bits won't be used for (0..99) range
 - Put in an explicit fix for module overlap
 - Round up #pix / module to multiple of ss width

First plots with phi-eta partition

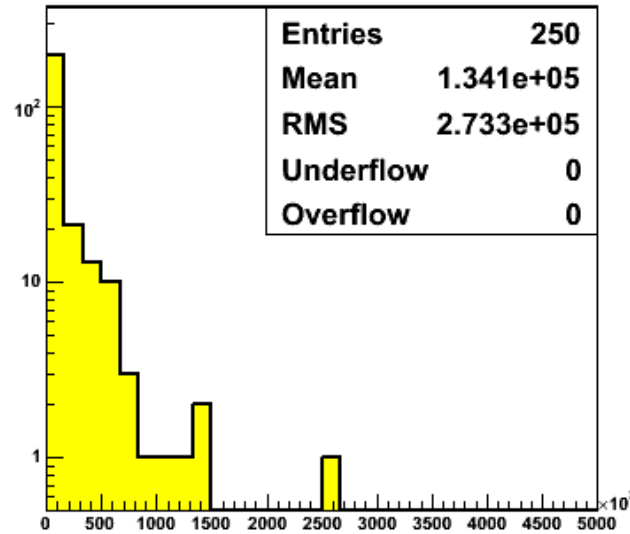
- This is using pre-bug version of the banks
 - But still includes module overlap problem
 - Only available on tier3
- Each module is divided into 5 equal bins
 - 328/**66**; 768/**154**; 144/**29**
 - Pattgen patterns w/ ~71% coverage
 - Compared to past (328/50, 768/64): larger SCT
- Some plots follow...

50x64, phi-only partitioning

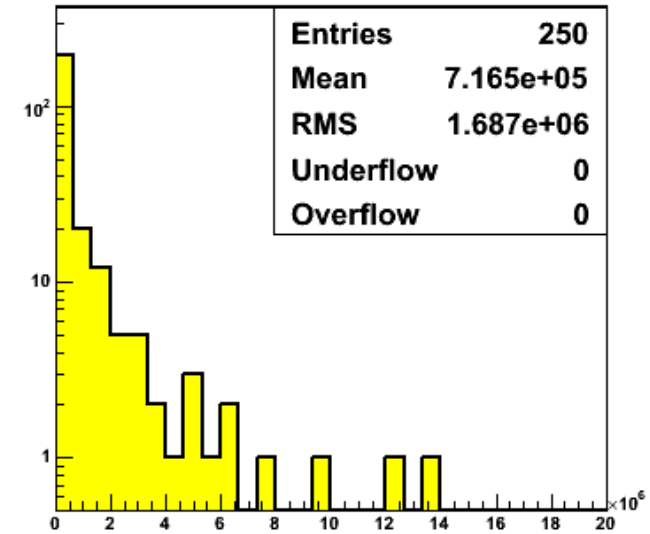
BARREL(1): fits per event(all)



BARREL(1): flts per event(miss)

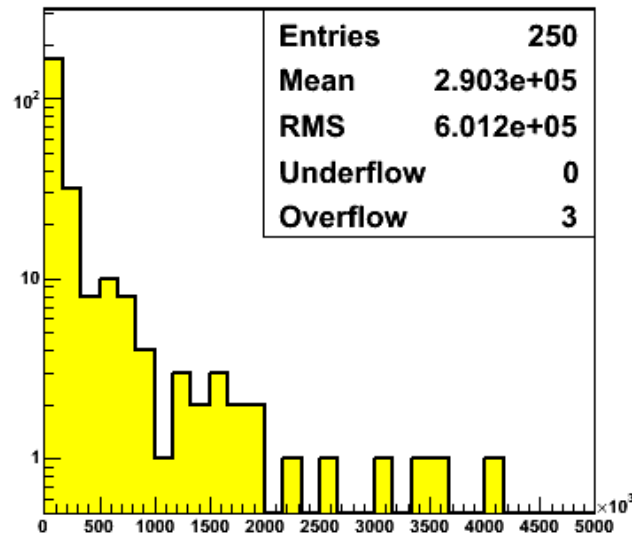


BARREL(1): flts per event(maj)

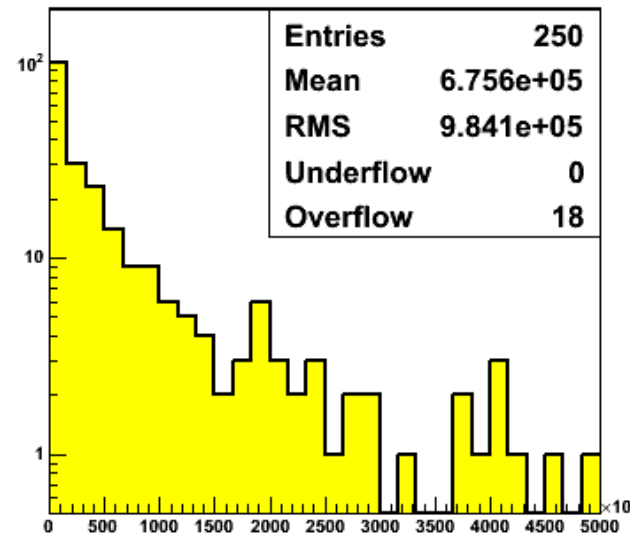


66x154, with eta 29

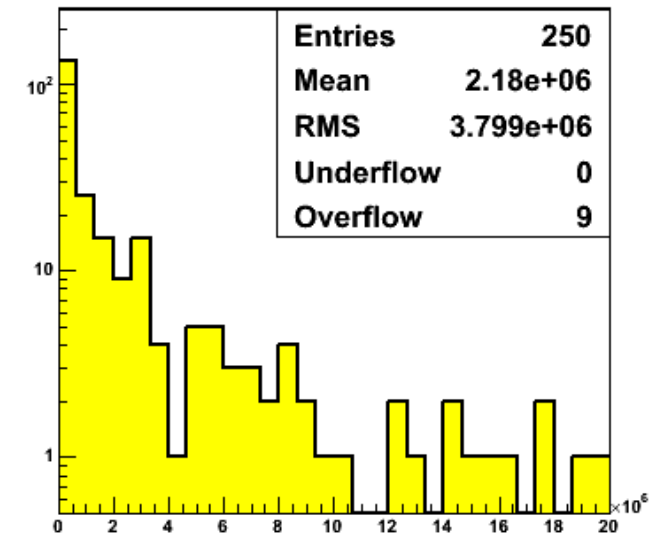
BARREL(1): fits per event(all)



BARREL(1): flts per event(miss)

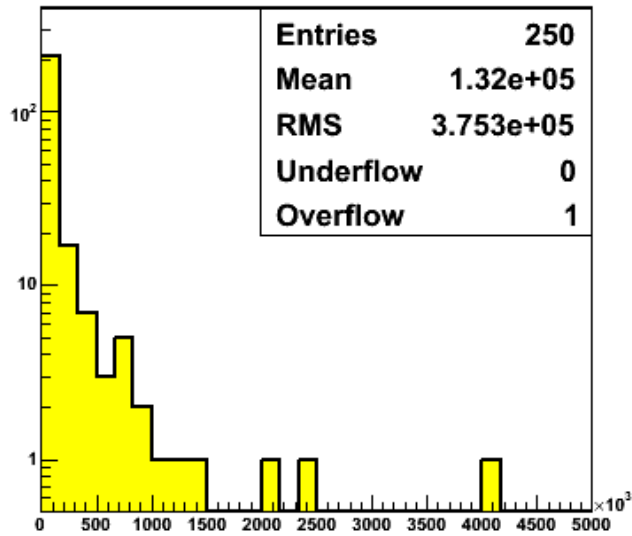


BARREL(1): flts per event(maj)

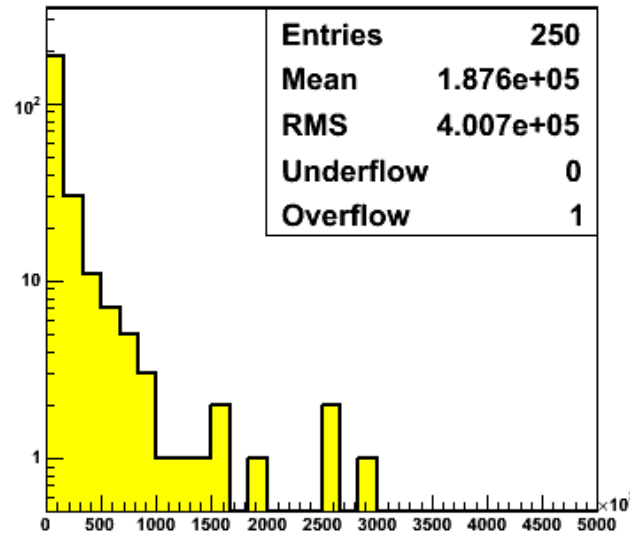


50x64, phi-only partitioning

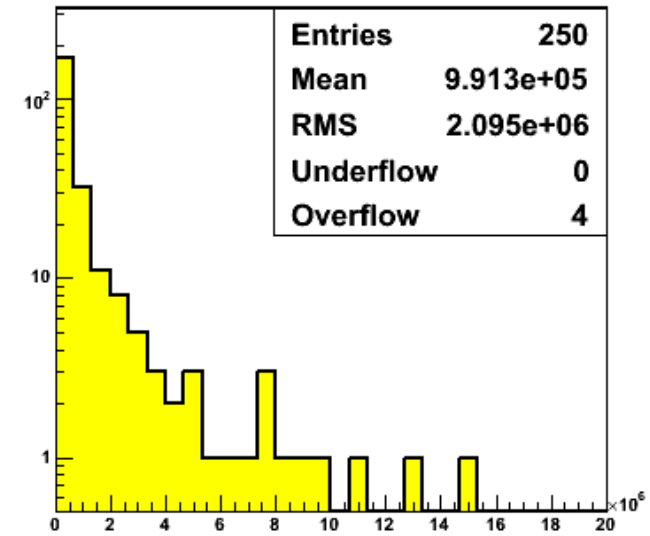
ENDCAP(1): fits per event(all)



ENDCAP(1): flts per event(miss)

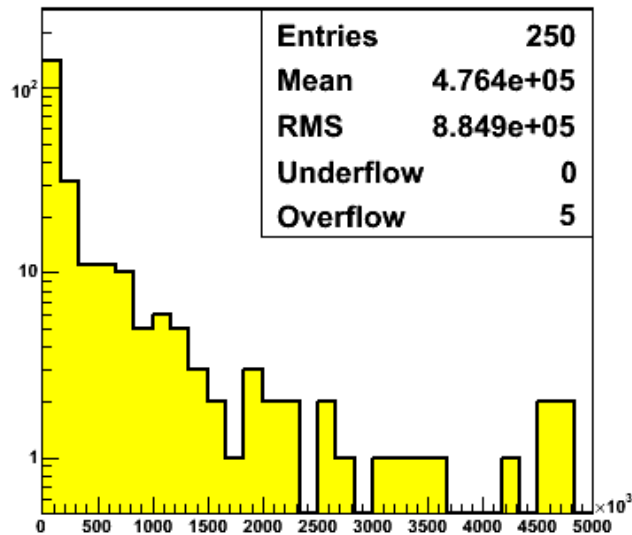


ENDCAP(1): flts per event(maj)

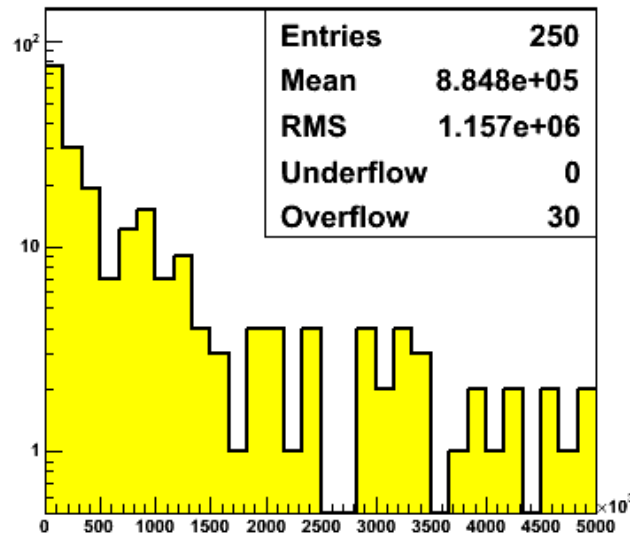


66x154, with eta 29

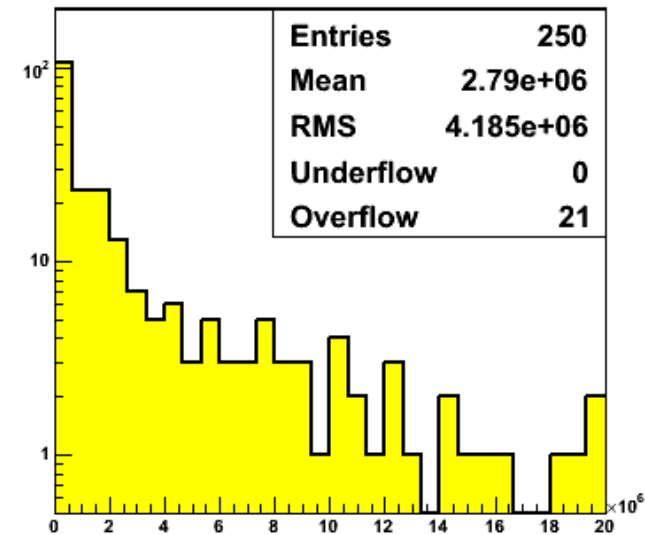
ENDCAP(1): fits per event(all)



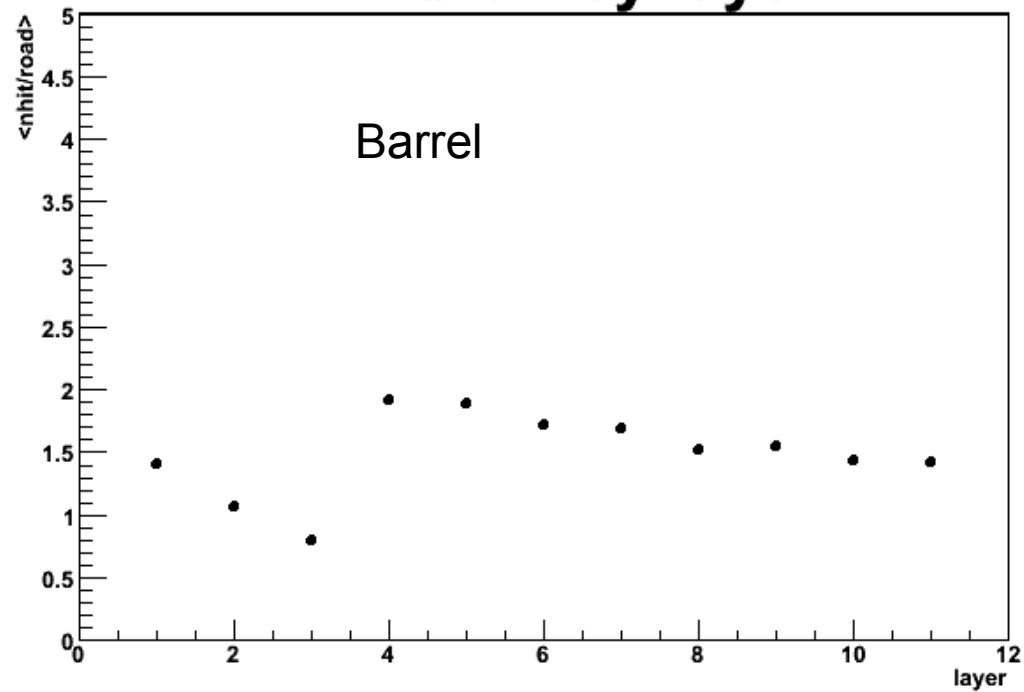
ENDCAP(1): flts per event(miss)



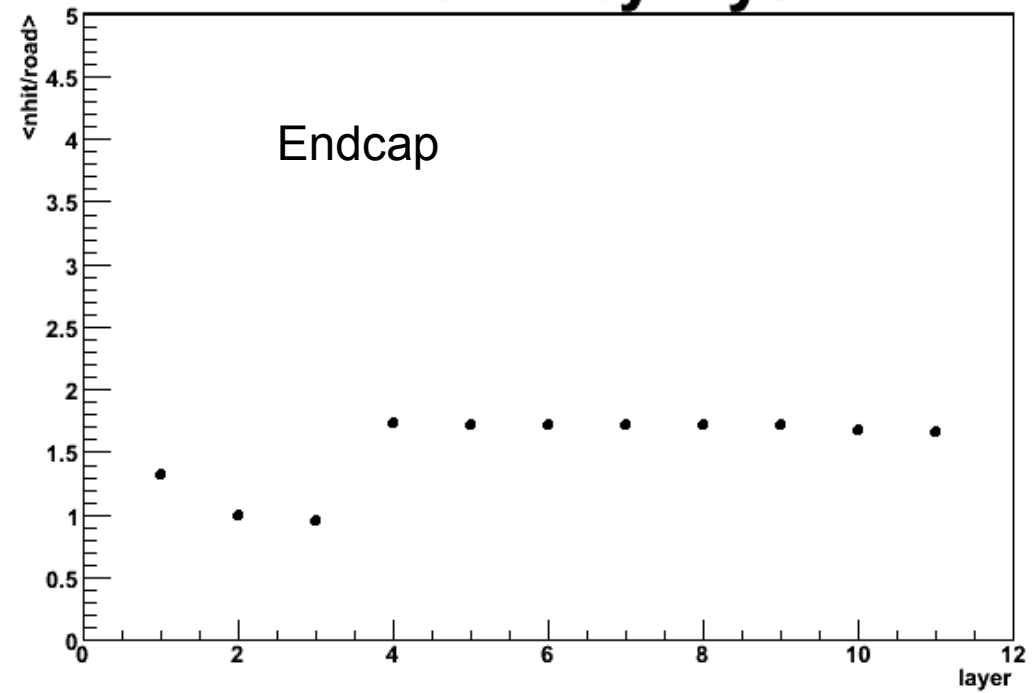
ENDCAP(1): flts per event(maj)



<nhit/rd> by layer



<nhit/rd> by layer



Plans

- If my latest bug fix tests correctly, we should freeze code changes and study some issues:
- Inefficiency of patterns-from-const patts
 - Once understood, generate large banks
- Optimization of SS width
 - Verify same # superbins in each layer is best
- Problems at 10^{34} – matching of ftk \leftrightarrow truth
 - Started looking at this (focusing on ftksim_comp)