

OnboardFilter & FilterAlg Recap

- On June 21 and September 13, reported in Ana Grp:
 - OnboardFilter geometry matches Gleam's
 - The emulation is working (FilterAlg)
 - 2 bugs were found
 - Both fixed in FilterAlg
 - One fixed (so far) in OnboardFilter
 - The background performance increased, while gamma performance decreased slightly.

The Remaining Bug

- One bug concerned veto bits 24 and 25
 - This is corrected in the FilterAlg logic
 - Still not corrected in OnboardFilter (as far as I know)
 - How I deal with it: use FilterAlg summary word (in MeritTuple) instead of OnboardFilter summary word
 - Even so, not a big concern, because these vetoes are rarely the sole reason for an event to be rejected (I don't have the computing power to generate enough events to create this problem!)

FilterAlg's Performance

- Previously reported that FilterAlg was not 100% reliable in the reproduction of veto bit 29
 - It is responsible for a discrepancy (event vetoed that should not be, or event passed that should have been vetoed) only $\sim 0.005\%$ of the time, or 1/20,000 triggered events.
 - The problem seems to be random, which suggests it is memory related (and makes it very difficult to debug)
 - Navid has been running Valgrind to look for memory problems in the code (also known: a 9KB/event leak)

Final Thoughts

- OnboardFilter and FilterAlg disagree rarely enough that the output of either one can be used for analysis without concern about impact on results
- For absolutely reliable results, one could use FilterAlg's output for all but bit 29, and use OnboardFilter for that bit.