

CDC ETF Module Status

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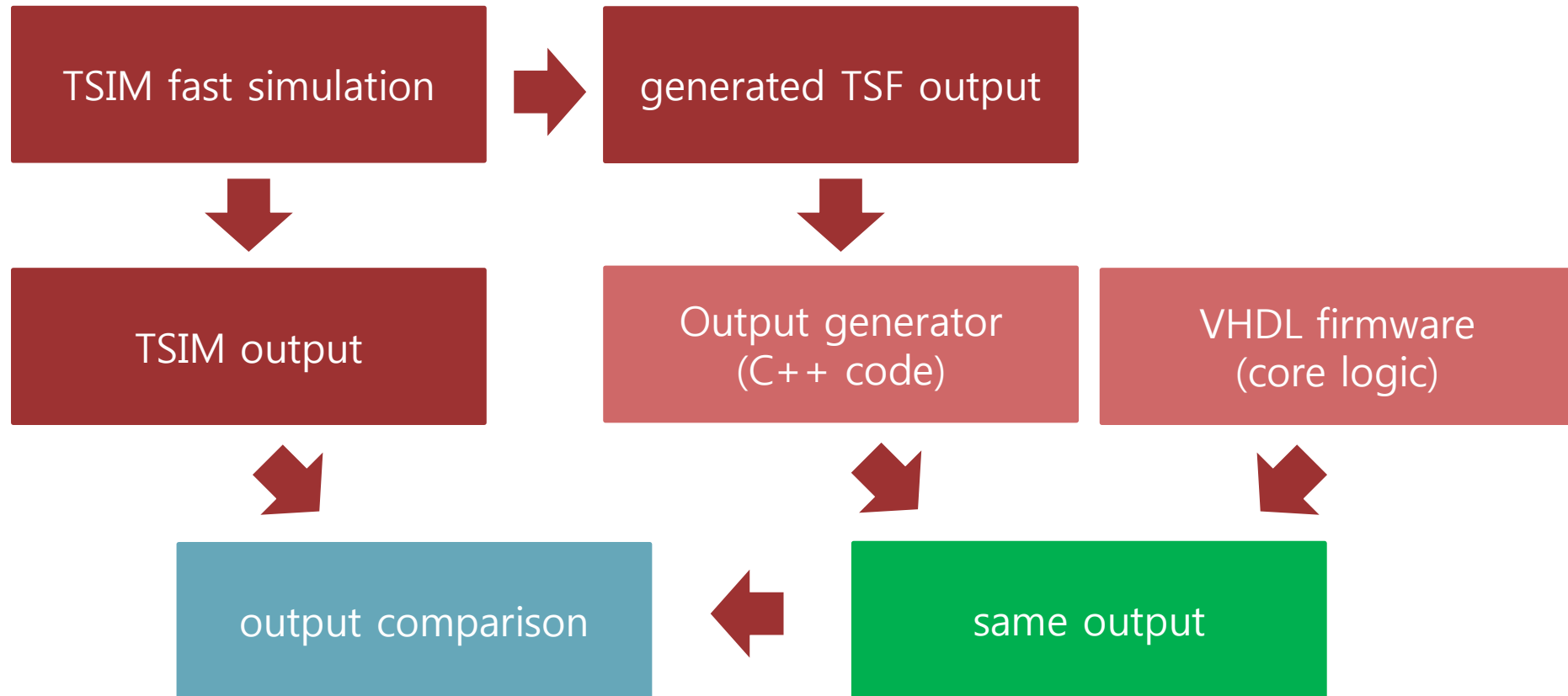
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- Status & Plans

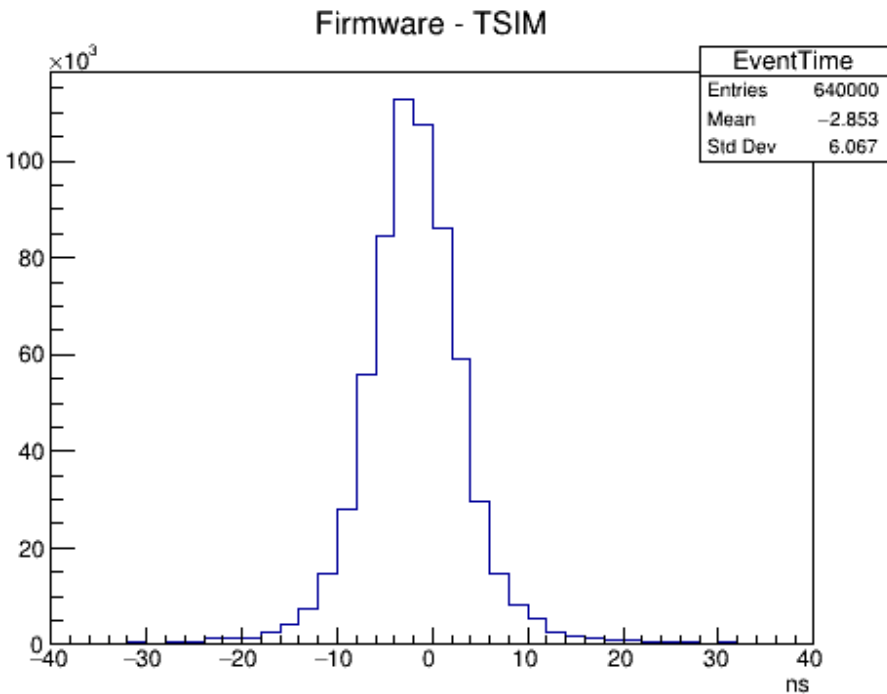
- 27th B2GM
 - TSIM
 - performance test using track related TS hits
 - yet poor performance on low multiplicity events with bkg.

- Changes on input dataset
 - from 259 ~ 483 bits
c.c.(9 bit) + hitmap(160 ~ 384 bit) + hit timing(10 * 9 bit)
to 108 bits
c.c.(9 bit) + # of hits(9 bit) + hit timing(10 * 9 bit)
- Logic test
 - I/O removed version
 - comparison with TSIM generated input / output

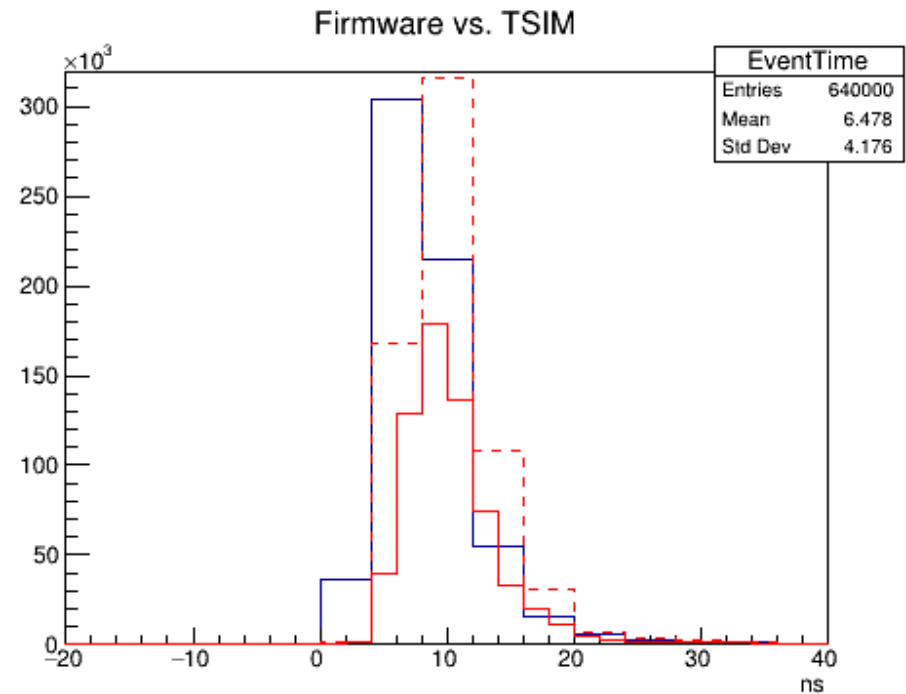


10k cosmic ray(no bkg)

- time jitter off(python steering file option for cddigitizer)
- set 64 clks(~2 us) for single event



Firmware output – TSIM output

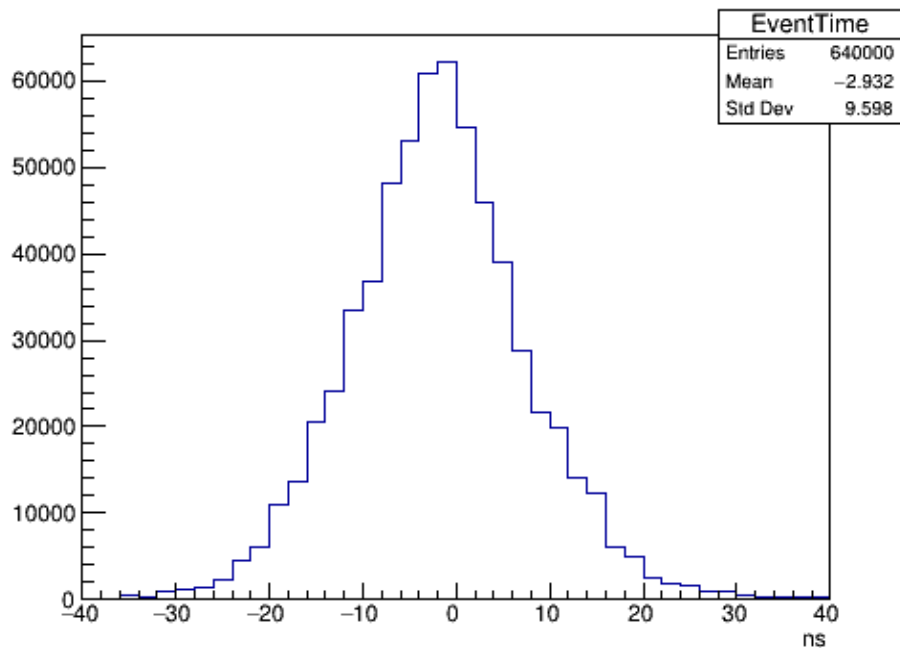


blue : Firmware, red : TSIM(2 ns, 4 ns)

10k cosmic ray(no bkg)

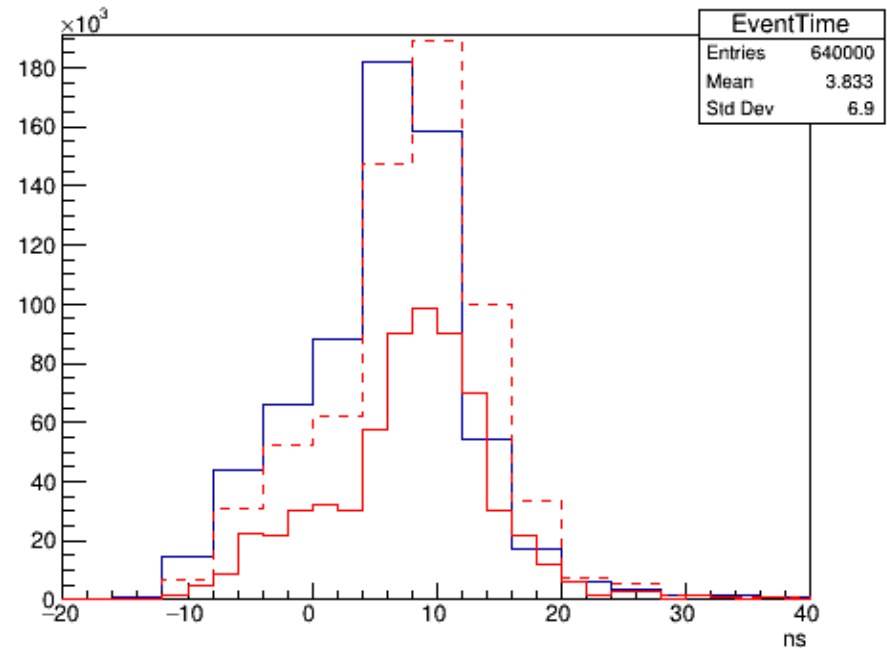
- time jitter 32 ns
- set 64 clks(~2 us) for single event

Firmware - TSIM



Firmware output – TSIM output

Firmware vs. TSIM



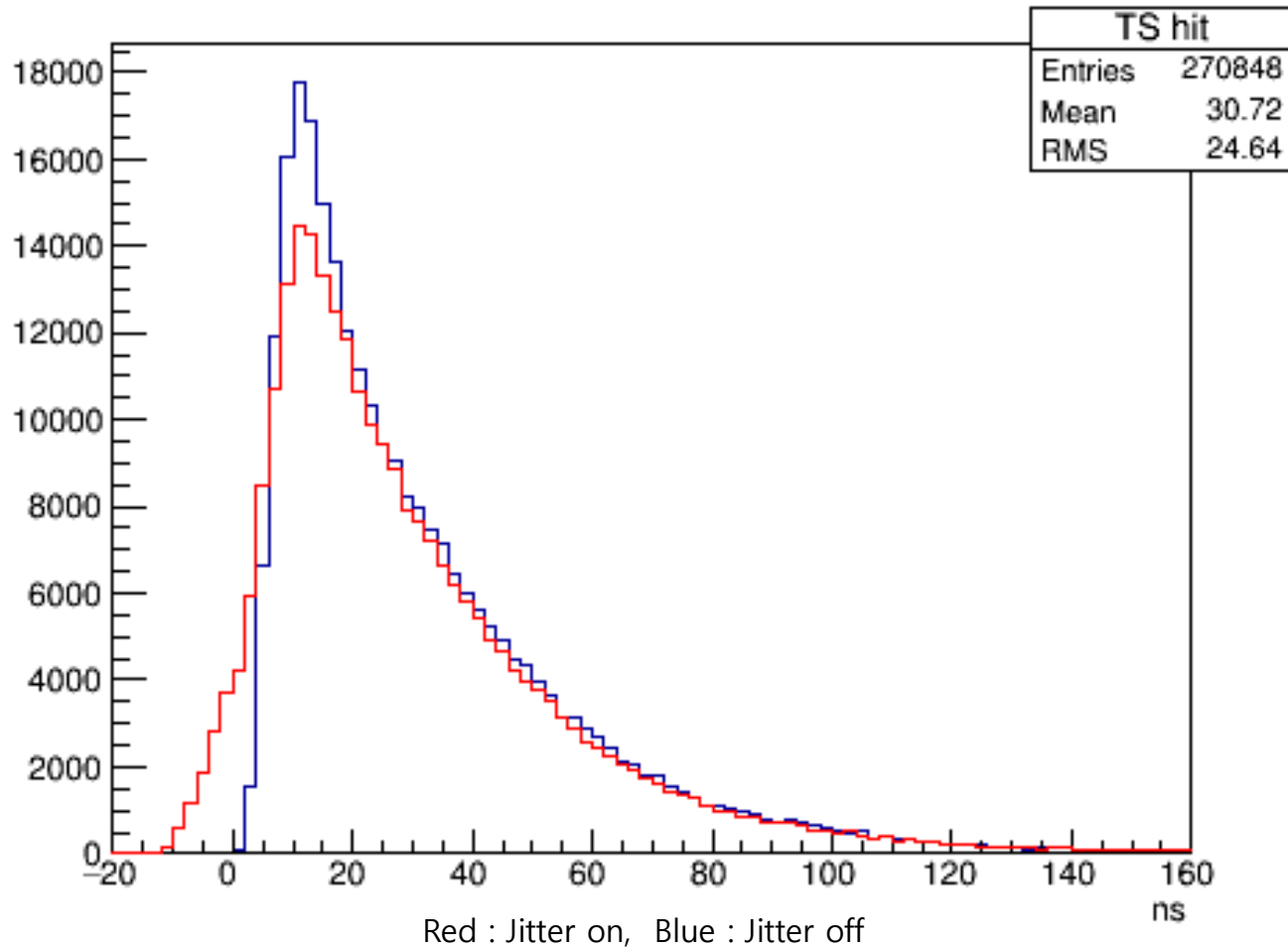
blue : Firmware, red : TSIM(2 ns, 4 ns)

- VHDL firmware
 - ETF output in 4 ns. order
 - NEVER(!!) tested version with I/O
 - don't know if it has any bugs or not
 - current version uses Chipscope for ETF output data taking
 - any other options for taking ETF output?
- TSIM
 - working on algorithm using track related TS
 - need to make TSIM firmware simulation module

Backups

TS hit timing

Jitter 32 ns vs. no Jitter



- TSIM generated Input dataset
 - time window : -1024 ns ~ 1024 ns (~ 2 us, 64 data clks)
 - TSIM : time integrated
 - VHDL : continuous, new input every 32 ns(64 input set)
- Output process
 - TSIM : fill and read hist at once, read entire time window
one(or none) ET for single event
no histogram overlaps between events
 - VHDL : fill and read hist every 32 ns, read last 1/4 of hist(512 ns long)
one ET every 32 ns
overlaps at the end of old event and start of new event
hold output for 31 clks when ET found(update when faster)

