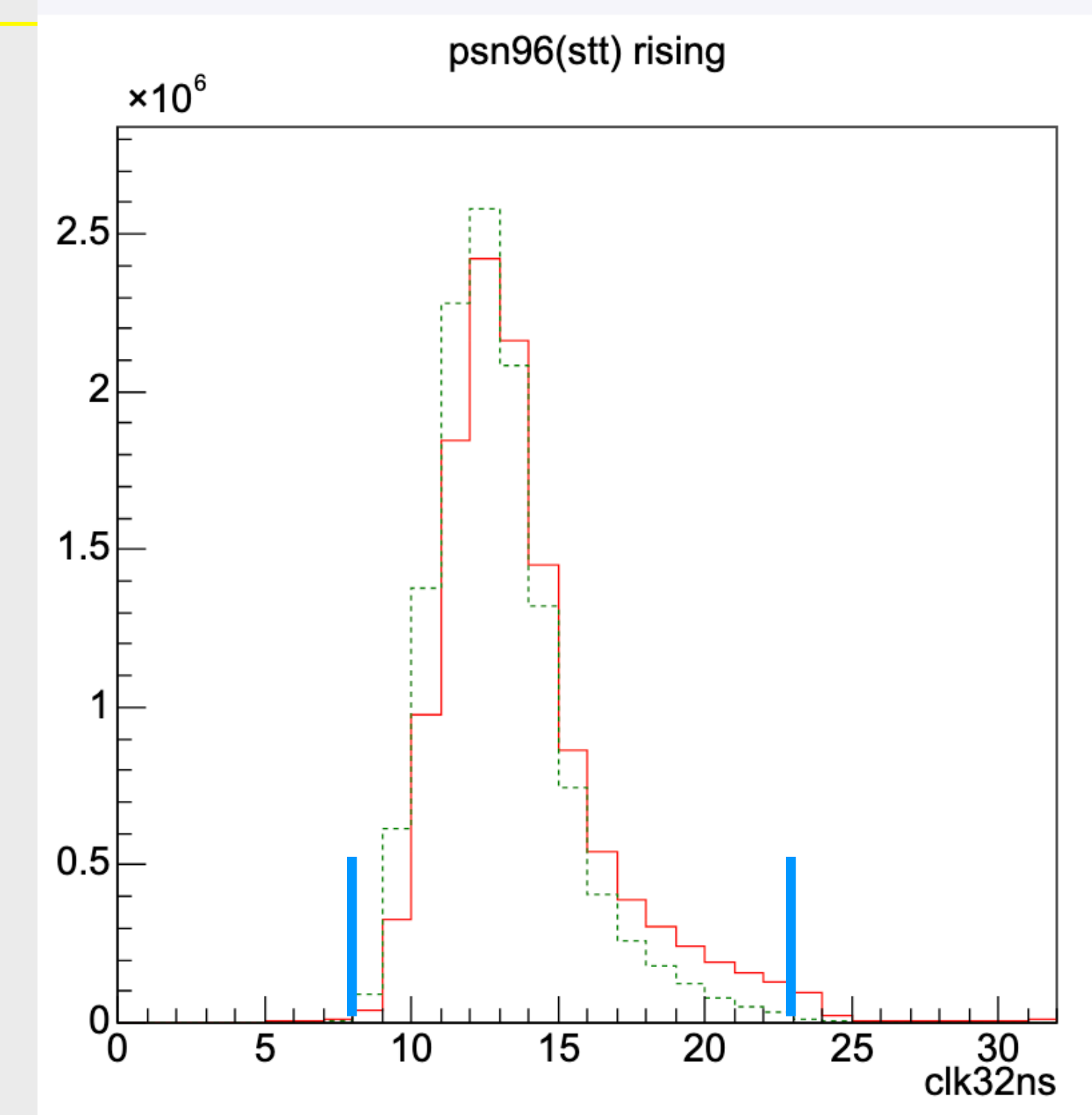


# **GDL**

H. Nakazawa (NTU)  
20241002@B2GM

# Extension of TMDL (timing decision) window

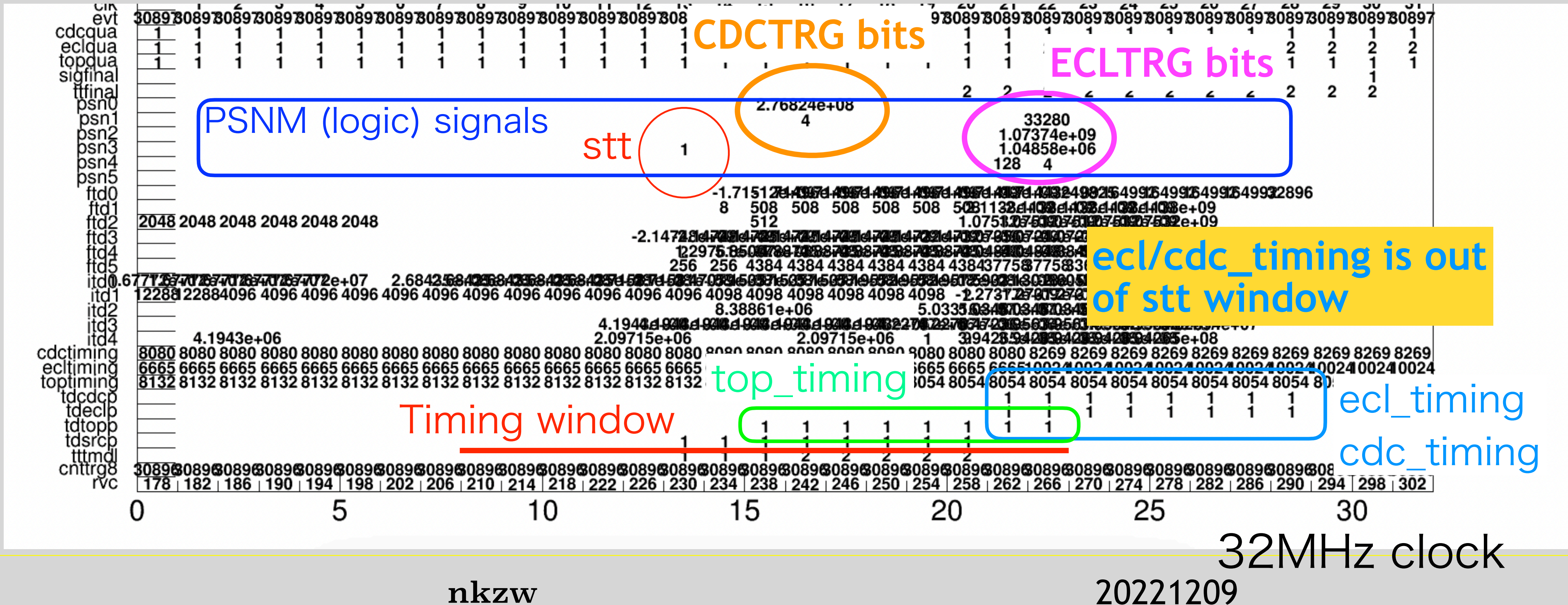
- Width of timing decision window (440 nsec) has been limited by latency and not enough to fully cover CDCTRG signals
- Thanks to 25Gbps protocol, Latencies are reduced and budgets are
  - ecl\_timing 340 nsec (44 sysclk)
  - cdc\_timing 500 nsec (65 sysclk)
  - top\_timing 0 nsec (any hidden budget?)
  - stt 80 nsec (10 sysclk)
- Extend the window by 8 or 10 sysclk maybe enough
  - Firmwares ready for test



1 bin = 31 nsec

# top\_timing event

- top\_timing was turned on with the lowest priority (ECL>CDC>TOP) in exp 31
- ~2% of hadron events were triggered with top\_timing which was not expected
- Found that stt (single track trigger bit) that comes earlier than other bits were used for the events which was also unexpected



# DQM for fastest PSNM signal

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- Motivated by earlier-coming stt, adding plot to see earliest PSNM bit for each event
  - (1) bit map for 3 timing sources
  - (2) Timing of each earliest PSNM
  - (3) Timing difference between earliest PSNM and rising edge of timing src

<https://gitlab.desy.de/belle2/software/basf2/-/commit/592cdae392ff4c447b94a3d71c2c14ee9aaea86e>
- Will be merged by next online-library-update

# Comments

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- GDL will go with the same firmware at the beginning of 2024c global cosmic ray run (today) unless no updates for injection veto