Application of DT5215 concentrator and DT5202 boards for BBC

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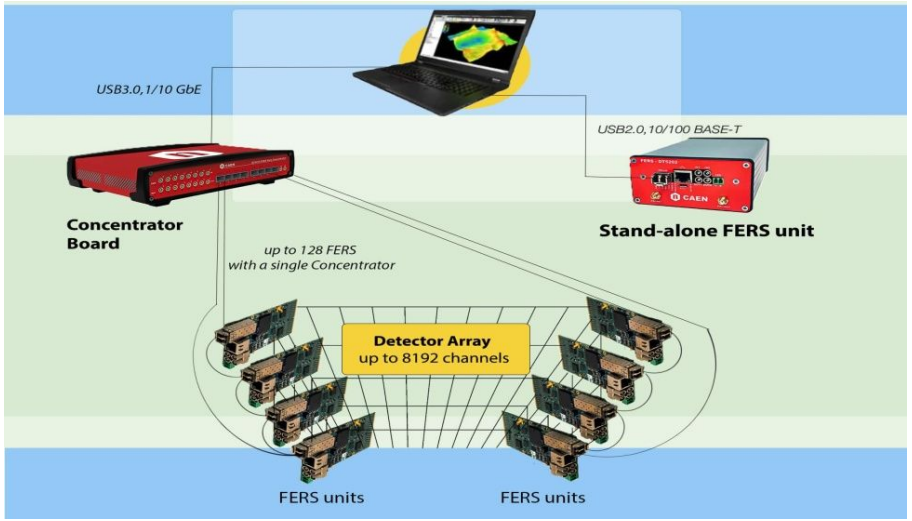
SPD Collaboration Meeting

Introduction

- **SPD** is planned to operate without **T0** (start) so we need to work in **free-streaming mode.**
- CAEN FERS 52XX gives us an opportunity to work in this mode.
- We need to conduct different tests in controllable environment.



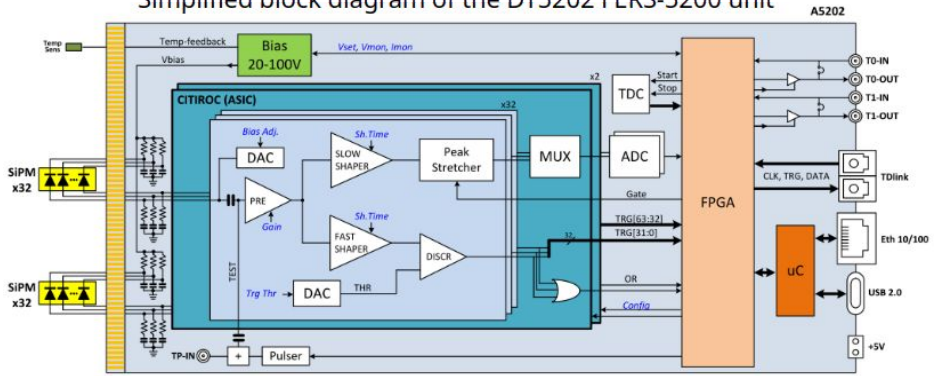
CAEN FERS 5200 is an extendable high speed front-end readout system

DT5202 (x2 Citiroc 1A chip)

DT5203 (picoTDC chip)

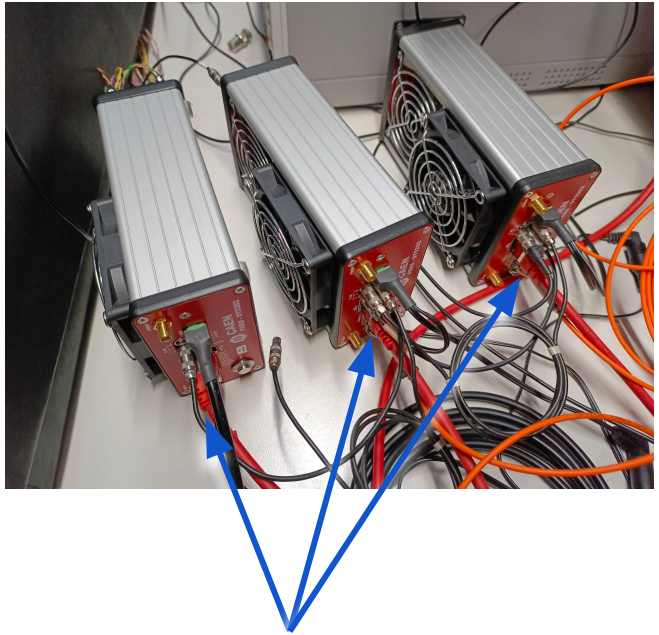
DT5215 (Concentrator)

Simplified block diagram of the DT5202 FERS-5200 unit



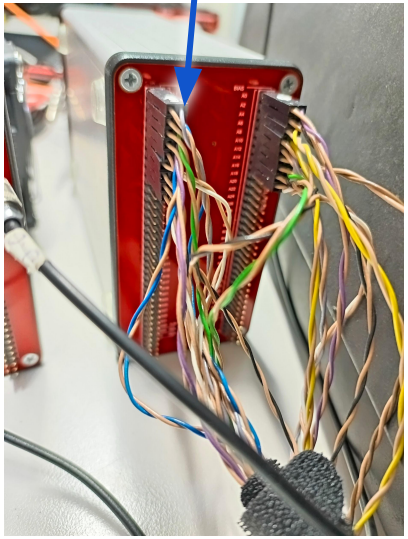
CAEN FERS Connections

DT5202

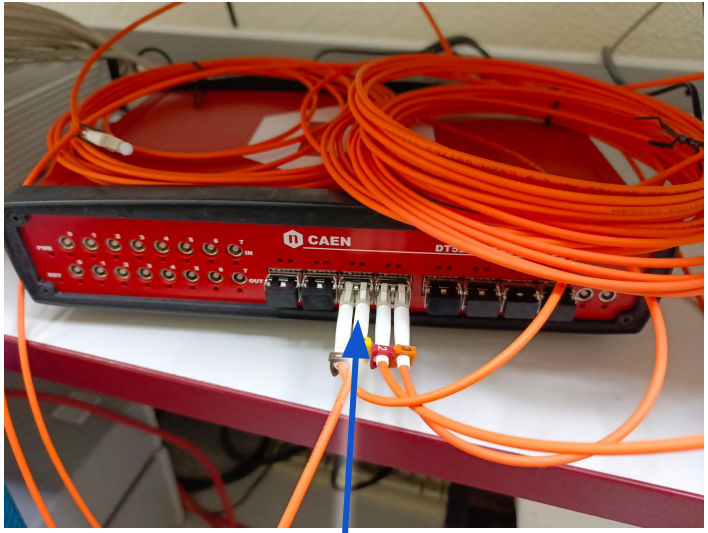


Board to concentrator
opto-fiber connection

Signal cables

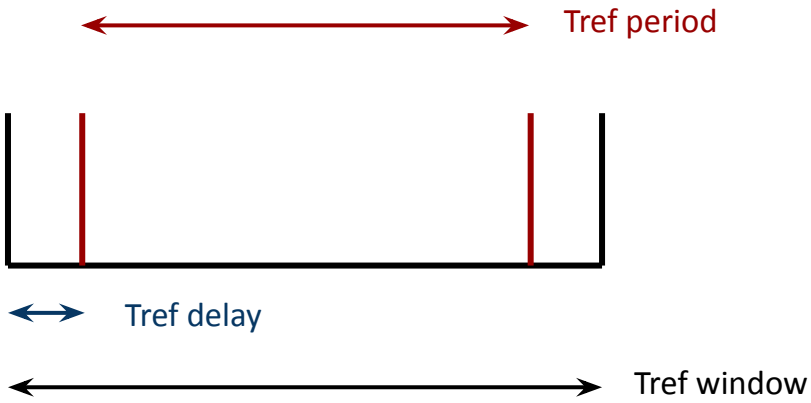


DT5215

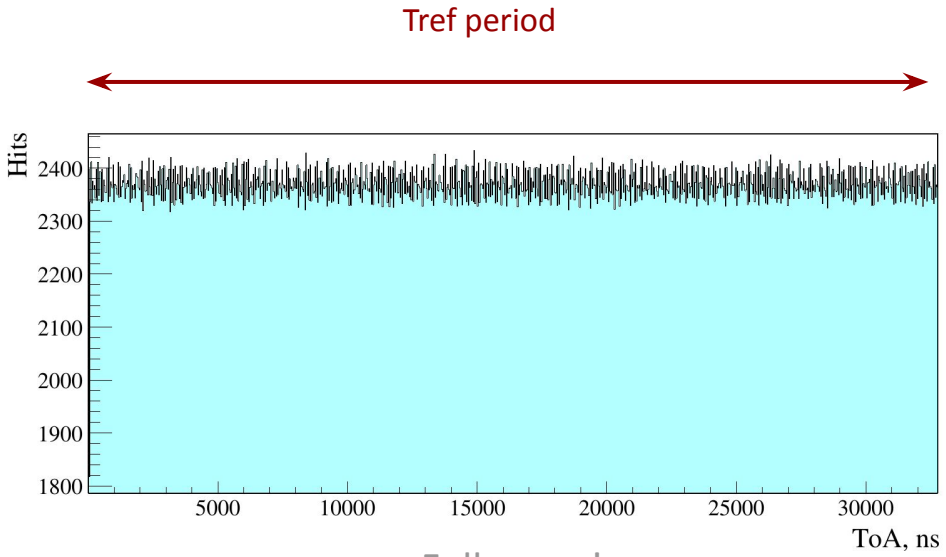


Concentrator to boards
opto-fiber connection

Hits acquisition ranges

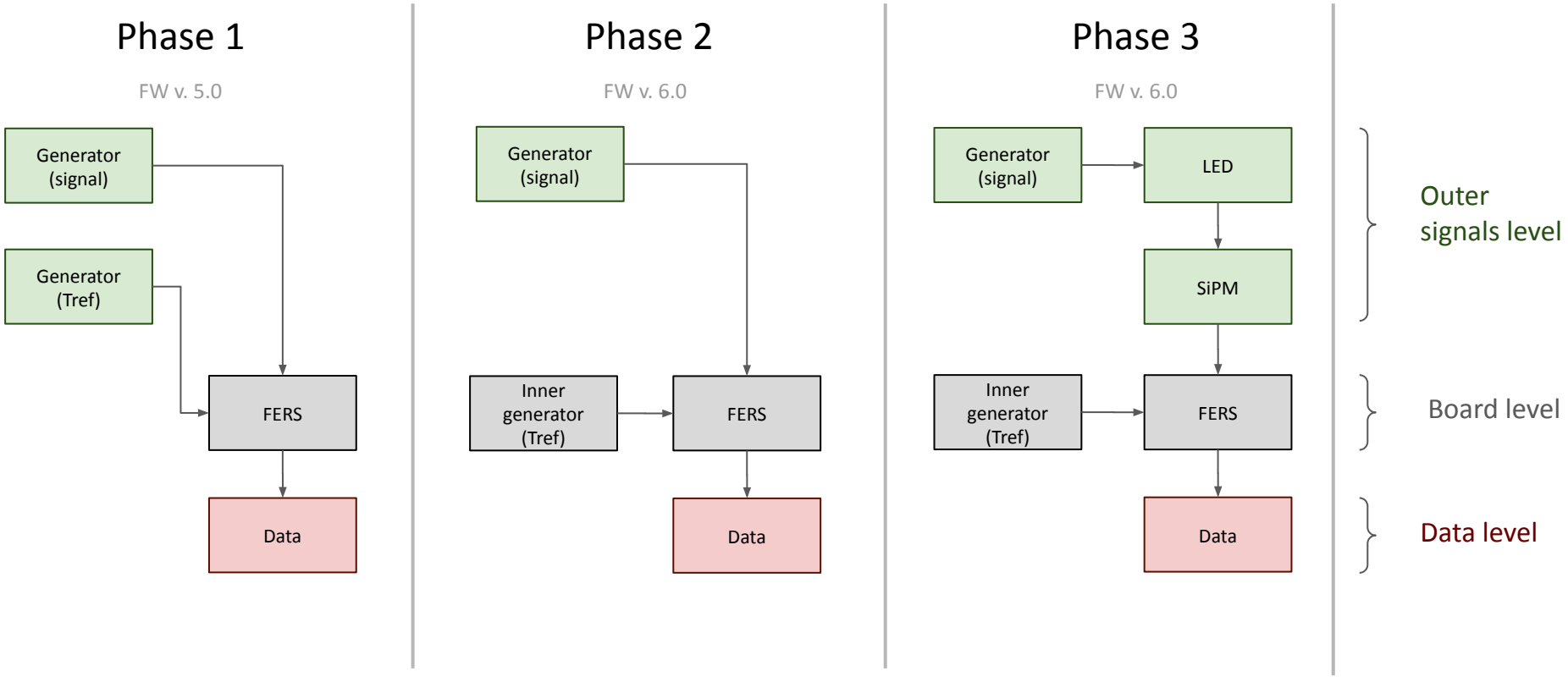


Tref may be provided by
- outer generator (T0)
- inner generator (PTRG)



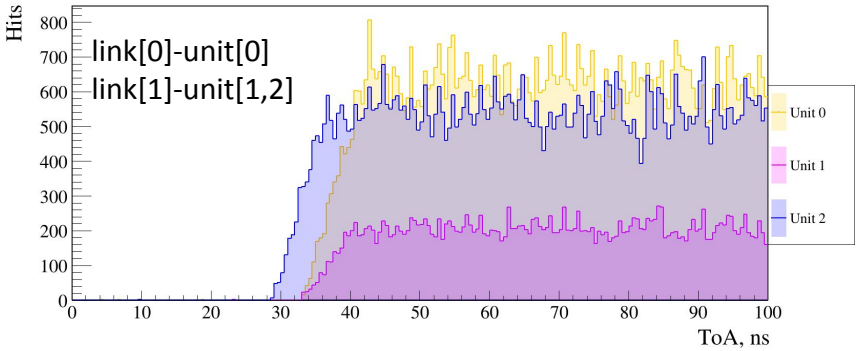
Full range!

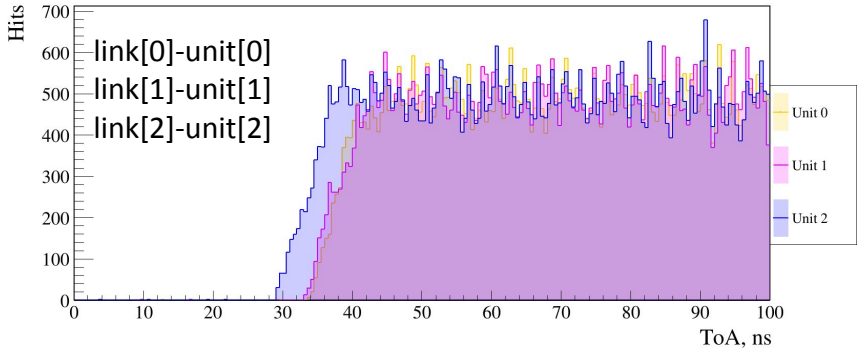
Phases of tests

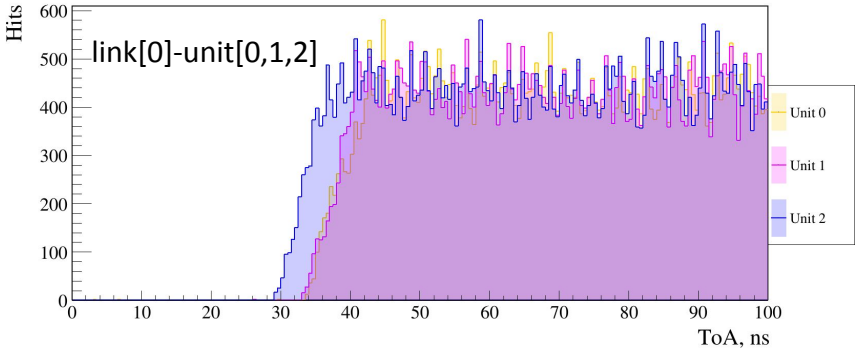


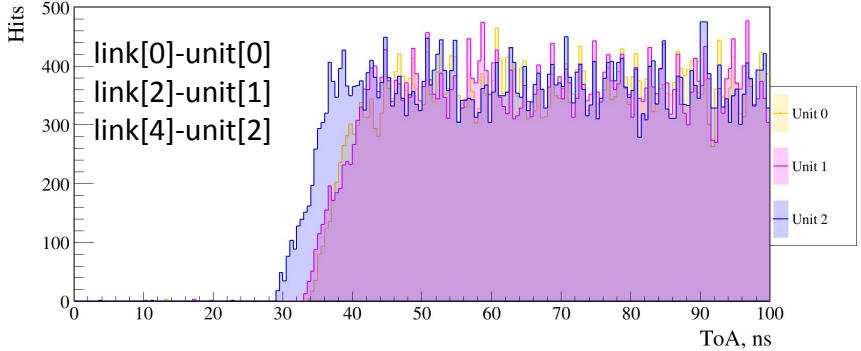
Tests with different unit-concentrator links configurations

Phase 2



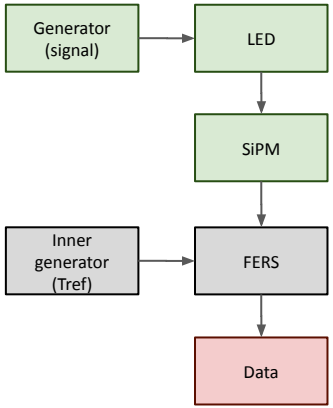






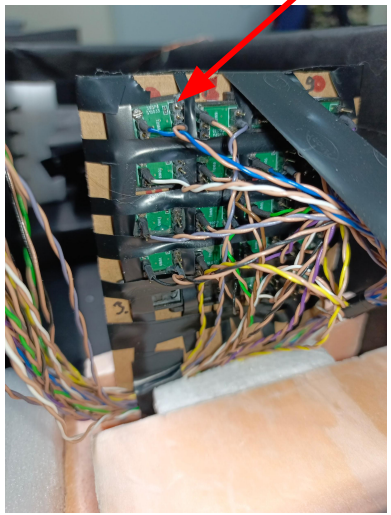
Phase 3

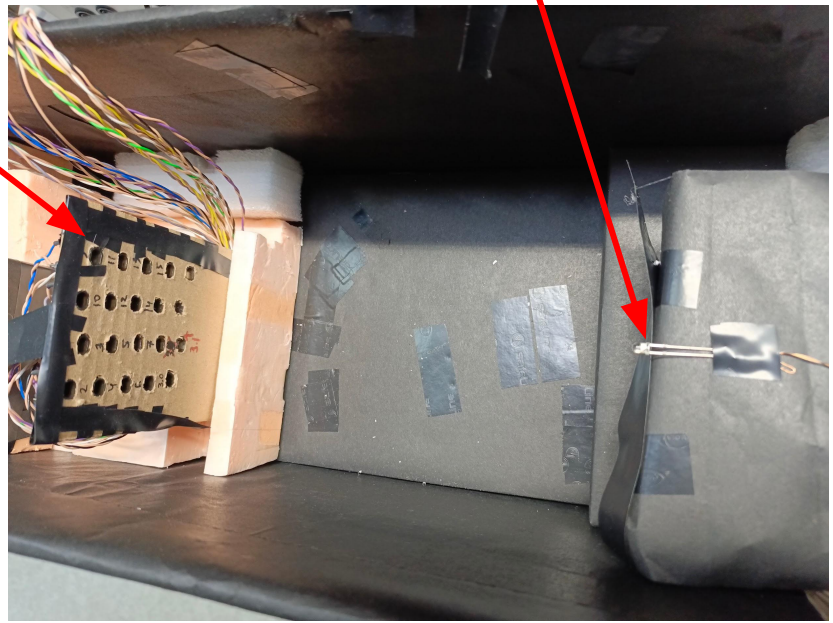
(closest to reality)



SiPM's array

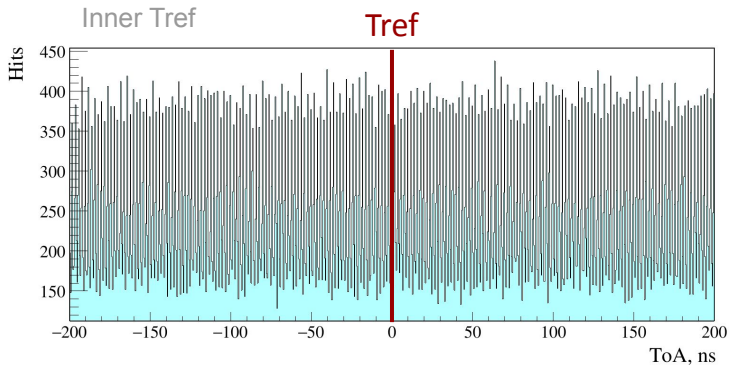
LED (connected to generator)

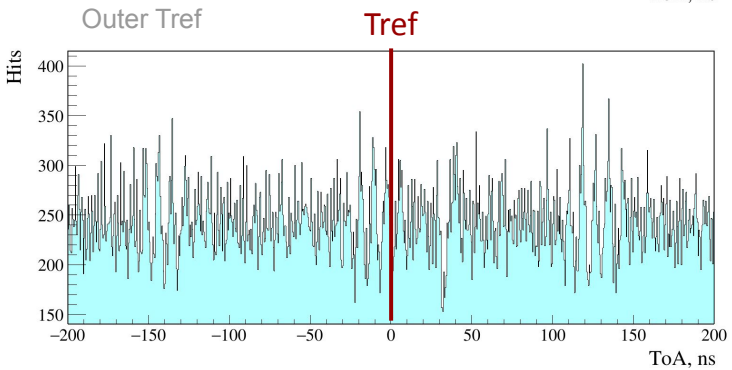




Hits around Tref signal

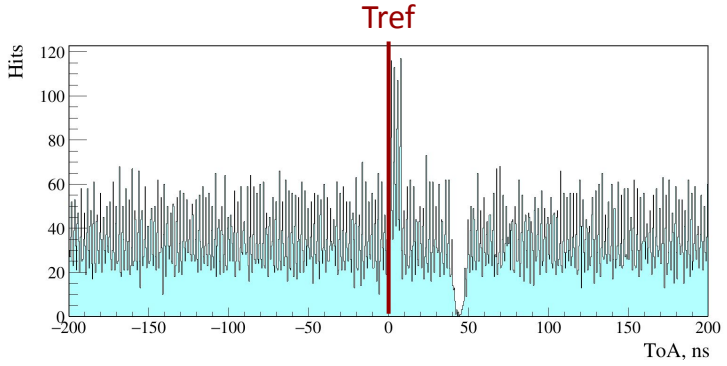
Phase 3

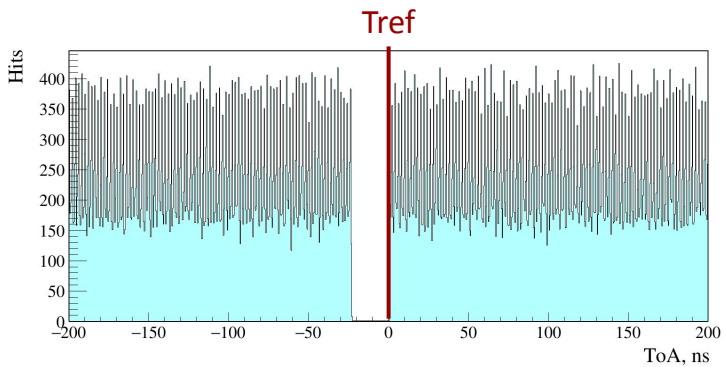




Tref delay = -68 ns

Tref window - Tref period = 100 ns

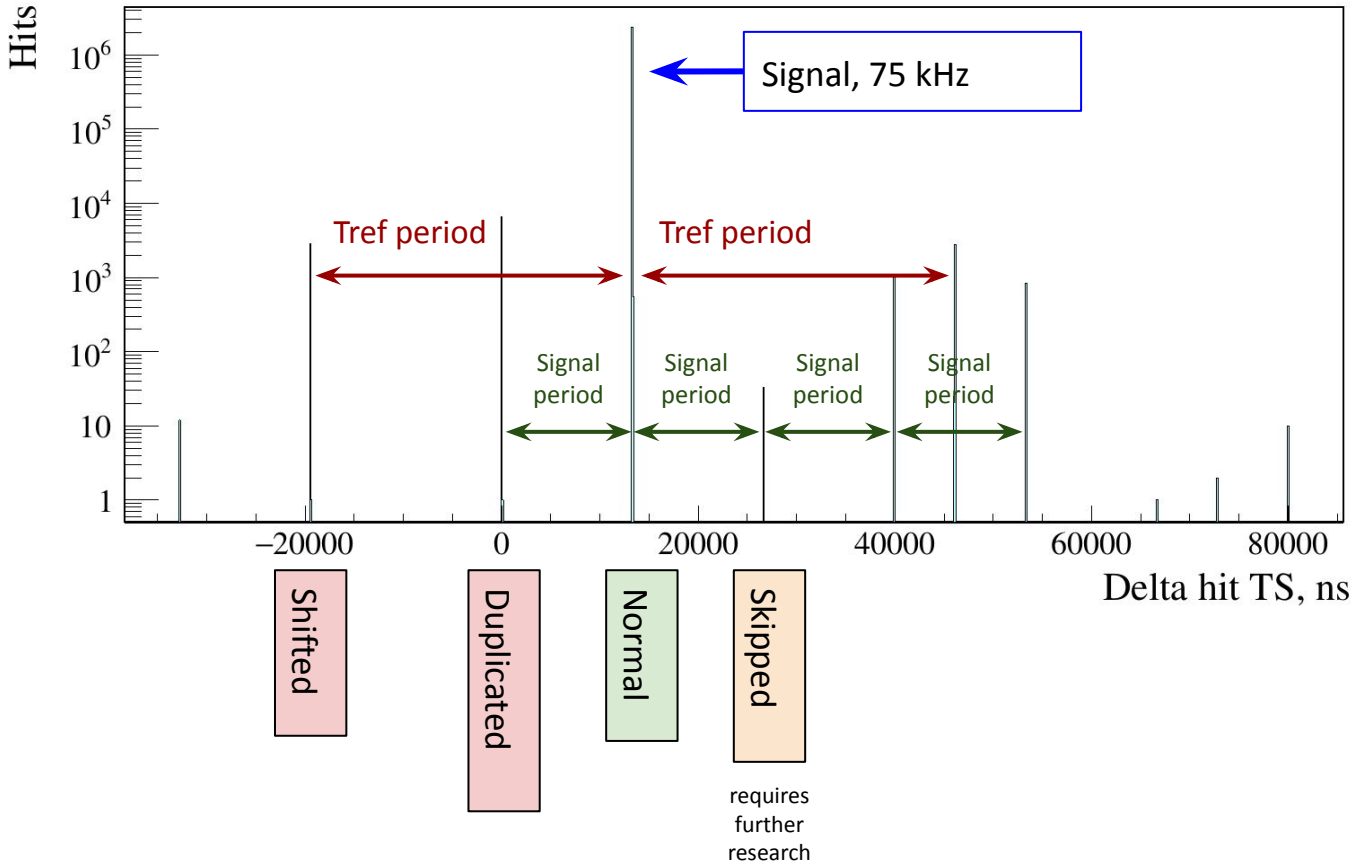




Any other

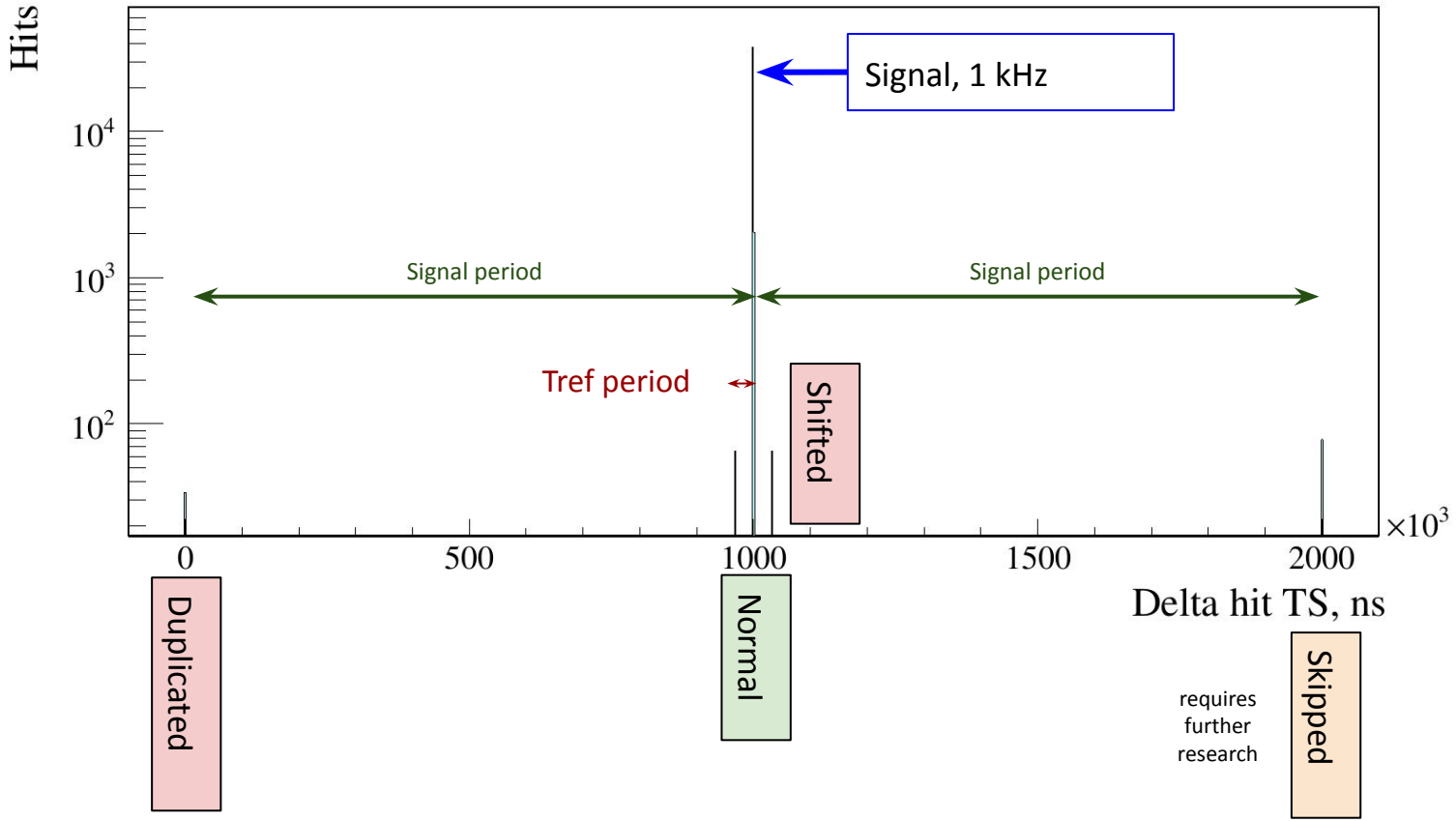
Hits time structure

Phase 3



Hits time structure

Phase 3



Conclusion

Different tests with **DT5202** and **DT5215** in **free-streaming mode** have been conducted;

Continuous data reading can be made only with **fine-tuning** of board parameters, poor data quality was observed;

If we want to use CAEN FERS DT52XX with SPD concentrators we also need **compatibility** with:

- synchronization system,
- data transfer protocol,
- data format,
- concentrator control system.

Future plans:

- try new firmware for DT52XX,
- try DT5203 unit,
- discuss problems with CAEN.

Thank you
for your attention!