Support for discussion on CALICE + AIDA Telescope

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DAQ2 TB working modes

Burst mode (≤128 FOR DHCAL)

No external trigger but independent recording of trigger mode (⊃ Timestamp)
(could be 1 HR recording Trigger bits)

Data sync internal [synchronisation on reset of BC ID on all HR].

Internal «RAM full» management needed
Every 128 DHCAL [16 ECAL] events

LOCAL: in DIF with immediate RO of SLAB

4 ms for 100 GeV π's without Reset (avoid loss of sync)

Indiv DT: might be hard too handle.

Local storage of data ????

Global

fast Ramfull → DAQ (stop of Acq, RO of all chips, and restart)

periodic interruptions (counting of part ? Hodoscope HR ?)

Single Event

External trigger (hodoscope) → DIF

Stop Acq

Read chips:
~0.16ms (+ noise if any)
⇒ **max 6kHz** on 100 GeV π's

Start Acq

Data sync (for Event building)

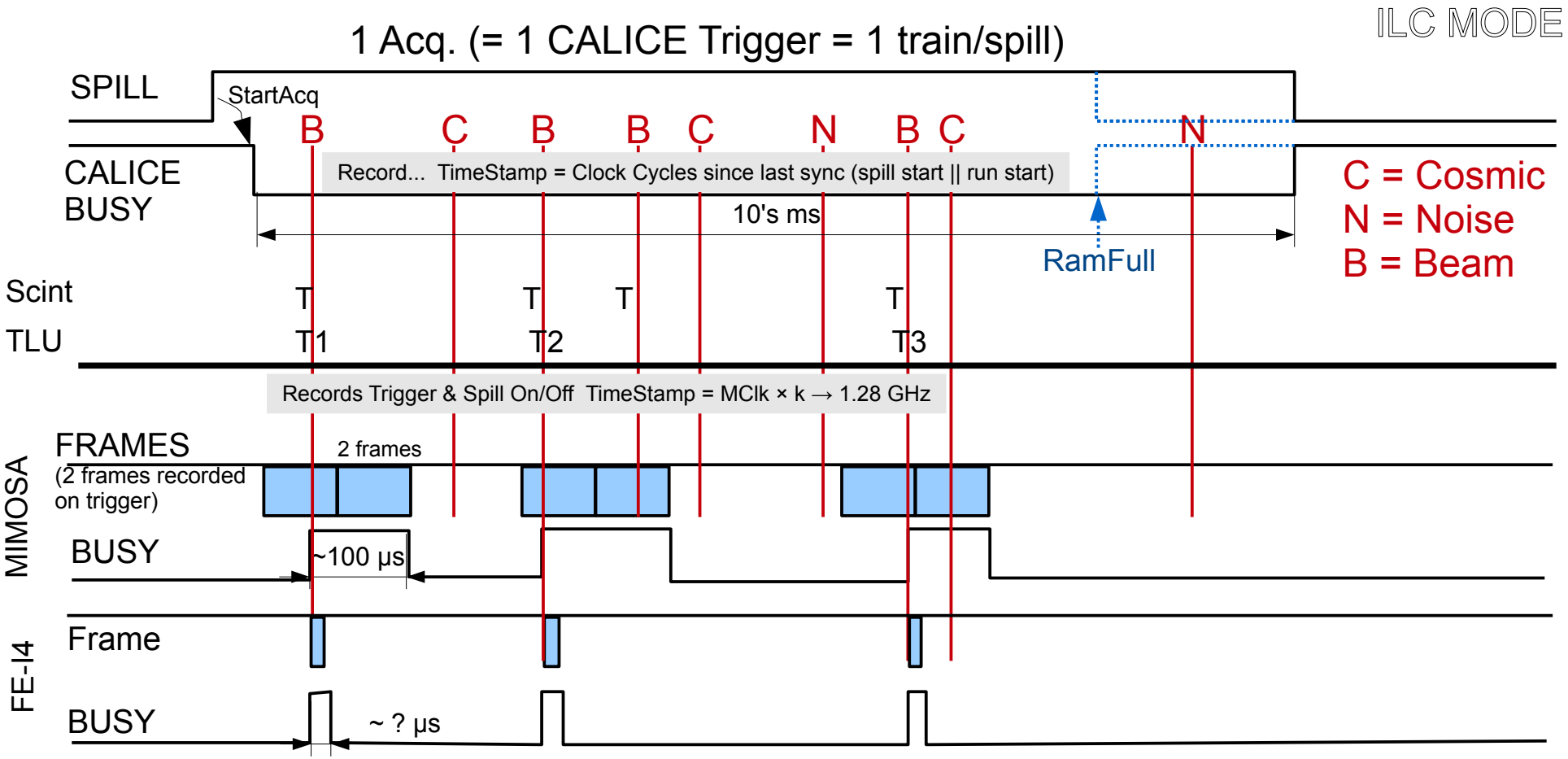
On synchronized BC ID

On trigger timestamp (e.g. On DIF Timecounter on last internal trigger to ext. trigger)

Fine if not RAM full
e.g. # rejected triggers + noise event per chip < 128 [16 for the ECAL!]

Ideally: have a circular buffer

ILC MODE



Current

RawEvent Telescope

Trigger#	TimeStamp @ 1.28 Ghz
Data	

RawAcq Telescope

From	To	Trigger#
From	To	TimeStamp
Data...		

LCIO file TS

Proposed per Train/Acq Data format

BIF on TLU
BIF in CCC

BIF data

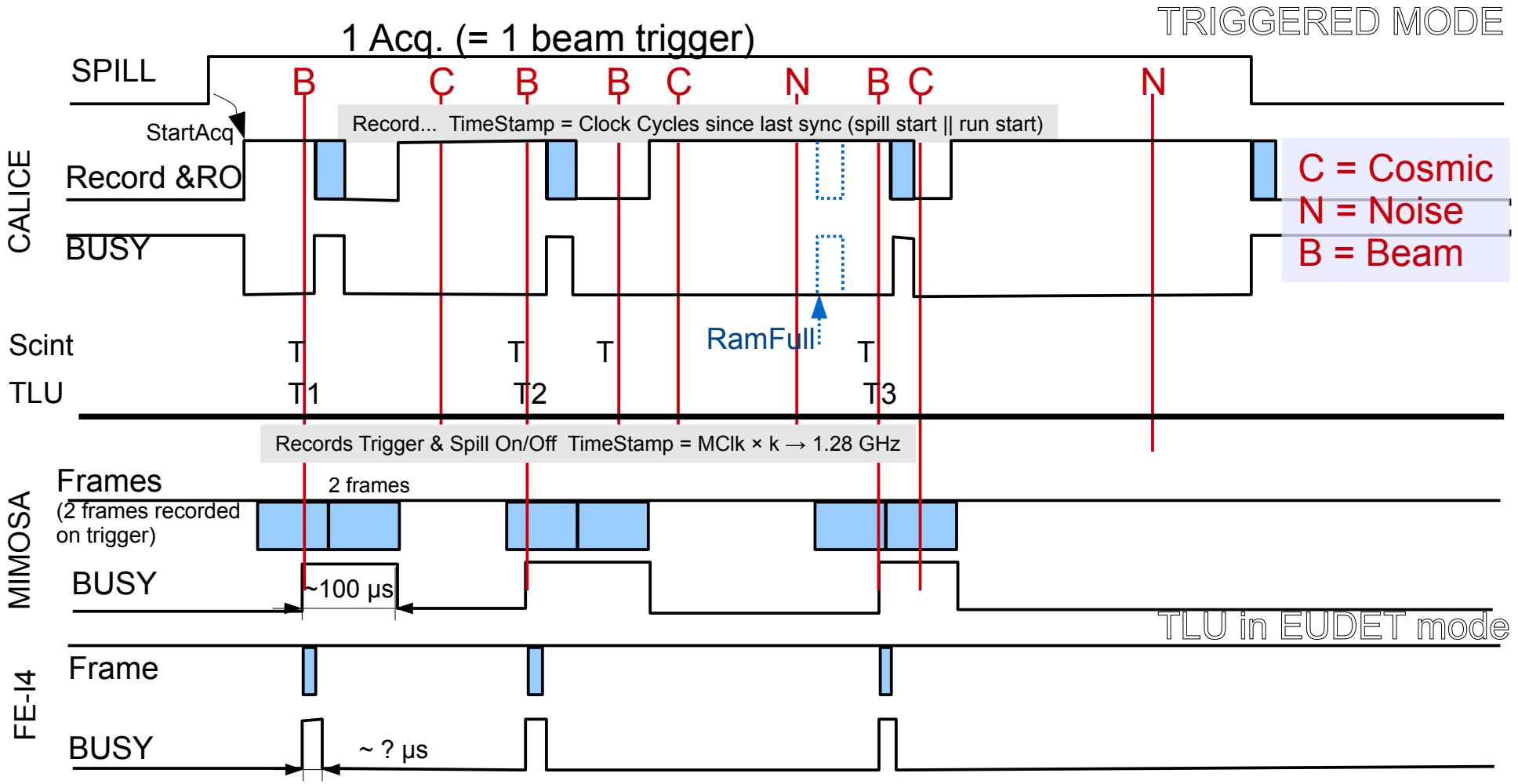
TLU Timestamp @ 1.28 GHz
Cal TimeStamp @ 5 MHz

RawAcq CALICE

Acq#		
TimeStamp @ 5 MHz	Data	ASIC1
:		
TimeStamp @ 5 MHz	Data	ASIC2
:		
		:

LCIO file TS

Online monitoring = stream with 1/N Acquisition with full rec (time ordering & clustering)



Current

RawEvent Telescope

Trigger#	TimeStamp @ 1.28 Ghz
Data	

LCIO file TS

BIF on TLU
BIF in CCC

BIF data

TLU Timestamp @ 1.28 GHz
Cal TimeStamp @ 5 MHz

RawAcq CALICE

Acq#		
Trigger TimeStamp @ 40 MHz		DIF
TimeStamp @ 5 MHz	Data	ASIC1
:		
TimeStamp @ 5 MHz	Data	ASIC2
:		

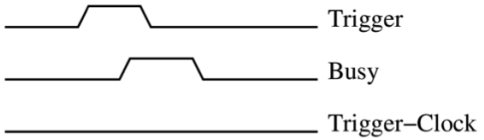
LCIO file TS

Online monitoring = stream with 1/N Acquisition with full rec (time ordering & clustering)

Solutions

- Common Requirements:
  - Synchronisation of low level SW EUDAQ ↔ CALICOES
    - Writing on single (single machine) or multiple files (with offline sync).
    - Online Data check: Synchronous flux of a given fraction of Acquisition to a dedicated machine
- Triggered mode requires:
  - Running TLU in EUDET mode (exist, used by SiTRA)
  - Check that Trigger TimeStamp is recorded in DIF FW (in // to the ASICs, with a larger depth)
    - Was done in SDHCAL DIF USB mode
  - (CCC decoding & recording of Trigger #)
- ILC mode requirements
  - Change of EUtelescope data format & offline rec. code
  - BIF programmation in TLU and/or CCC2 (dual TimeStamps in each device).

– Trigger-Busy handshake



– Trigger Data handshake