Progress Report

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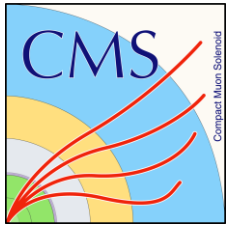


Status

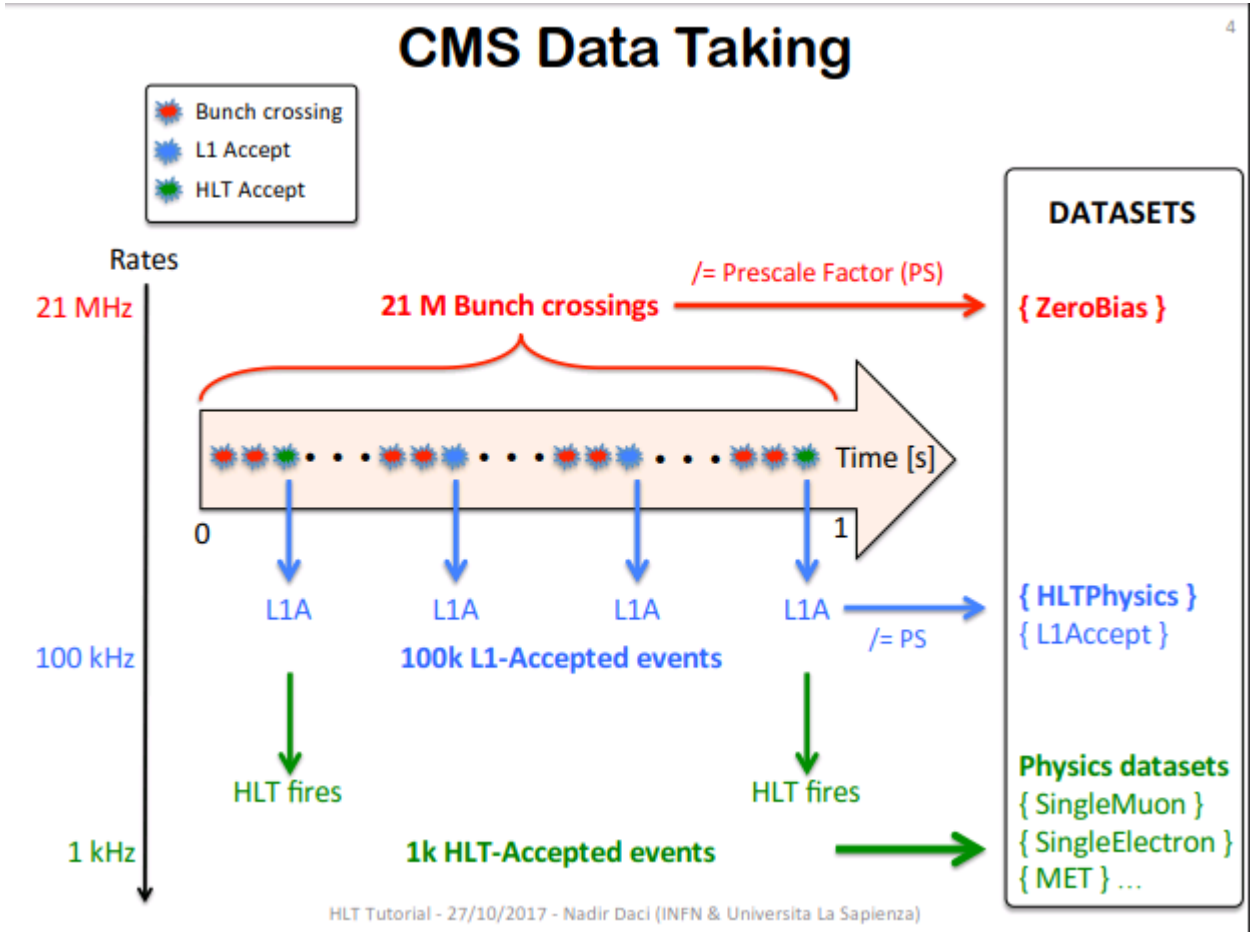
- DT
  - Configurtion Database
  - Possibility of monitoring MicroTCA crates
- Again problems with the alarm screen
- Change of component dependencies caused problems in project creation
- Central project merging:
  - Modified components
  - Tested project merging
- System recovery
- BRIL/ECAL problem with mainframe communication

DCS

- Study trigger behavior
- Specific rate (Events/sec) for whole HLT menu
- Prescale (run the trigger every X events)
- How will our trigger behave?
- Study rate offline

Trigger Studies

- **LHC Revolution Frequency:**
  - Circumference: 26659 m
  - Proton speed (7 TeV): 0.999999991 c
  - Speed of light: c = 299792458 m/s
    - → F_{LHC} = 11245.45 Hz
- Nominal number of bunches: 2808
  - → Bunch crossing rate: 32 MHz
- #colliding bunches in Fill #6325: 1866
  - → **Bunch crossing rate: 21 MHz**



- Lumi section: Time interval used in cms
- Every lumi section is the time required for 2^18 LHC orbis
- 2^18/11245.45 = 23.31 sec

Trigger Studies

Rate calculation:

Data: HLTPhysics

$$R = PS(\text{HLTPhysicsX}) \times \frac{\#(\text{HLT\_Path})}{\#\,\text{LS} \times T_{LS}}$$

- **PS** = prescale of the HLTPhysicsX dataset
- **#(HLT_Path)** = number of events triggering
- **#LS** = number of lumi sections processed
- **T_{LS}** = lumi section duration (23.31 s)

Rate calculation normalized:

$$R = SF(Lumi) \times PS(\text{HLTPhysicsX}) \times \frac{\#(\text{HLT\_Path})}{\#\,\text{LS} \times T_{LS}}$$

Trigger Studies

Original talk link:

HLT Rate Studies

Tutorial indico link:

HLT tutorial (27 October 2017) · Indico

Tutorial twiki link:

Trigger Tutorial 2017 twiki