



# ECAL DPG meeting Feb. 27, 02



## Progress with the commissioning of ECAL gap event acquisition

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# Introduction



- Transparency of the ECAL crystal is monitored during physics run and between physics runs.
- During physics run, the monitoring events are taken in the abort gaps of LHC ( $\sim 3\mu\text{s}$  every  $89\mu\text{s}$ ): 1 event every 112 gaps.
- Commissioning of ECAL gap event acquisition at P5 started on Jan. 30th.
- People having participated to the commissioning or provided substantial help: David Bailleux, Adi Bornheim, Nicolo Cartiglia, Jose Carlos Da Silva, Christophe Schwick, Andre David, Marc Dejardin, Jean-Louis Faure, Giovanni Franzoni, Giuseppe Della Ricca, Wolfgang Funk, Philippe Gras, Christian Hartl, Patrick Jarry, Pasquale Musella, Emanuele Di Marco, Paolo Rumerio, Hannes Sakulin, Jose Da Silva, Evgueni Vlassov, Marco Zanetti.



# Monitoring sequence

- The whole ECAL is scanned in ~30min.
  - The ECAL is divided in 92 Laser Monitoring region “Extended” (LME).
  - A scan consists in:
    - scan with the blue laser on EB and EE followed by the IR laser on EB with:
      - 200 Pedestals in first LME
      - 200 Test pulse in first LME
      - 600 laser events in first LME
      - move to the next LME.
- Taken during the time the monitoring region selection switch is moved.



# Gap event acquisition mechanism



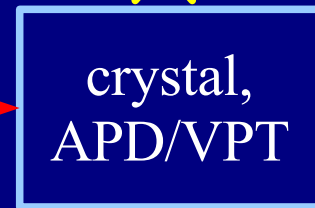
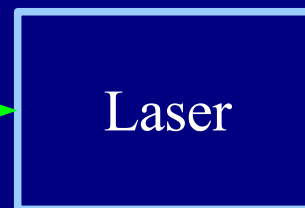
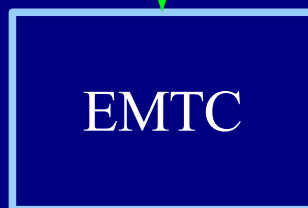
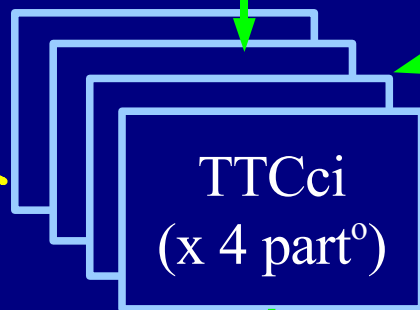
Gap event frequency defined in TCS (LTC in local mode)

Sequence defined in TTCci's

Trigger & synchronous commands (TTC)

Laser light

Data





# ECAL gap event acquisition commissioning activities in P5 of the last weeks



- 30<sup>th</sup> Jan. - 8<sup>th</sup> Feb.: commissioning in local DAQ mode
- 1<sup>st</sup> - 2<sup>st</sup> Feb.: preparation for commissioning with TCS and global DAQ mode (minidaq)
- 3<sup>rd</sup> Feb.: commissioning with TCS and minidaq (Private Global Run)



# Commissioning achievements



- Local DAQ mode acquisition with sequence including pedestal, test pulse and laser events scanning many SMs was validated:
  - With LTC with EB- and EB+ partition in the sequence
  - Without LTC: using internal TTCci generator; mode limited to single TTC partition run.
  - Timing and procedure to set the timing validated.
- Global Trigger and DAQ mode mechanism validated using minidaq. Timing validated with the Test pulse events. No laser signal in data: see next slide.
- HLT module to extract gap event data from the data stream validated (Marco Zanetti).
- Set of gap event data files were produced and is available for the development and test of the reshuffling application:
  - Gap event data come out of the global daq spread in different files and in disorder. Events need to be reordered and grouped by monitoring region subruns.



# Problems encountered during commissioning



- Laser signal was lost just before the global run data taking.
  - Probably only due to time alignment setting, but we didn't have the time to check it before the data taking. We've decided to focus on the triggering and DAQ path and leave it apart for the Private Global Run.
  - Laser was fired and optical switch was working properly.
- PC instabilities due to a CAEN VME access driver bug:
  - Appeared with the migration to SLC4;
  - Cost lost of time, before we discovered the source of the PC “freezings”;
  - Matacq readout was particularly affected by the bug: the Matacq was finally disabled to circumvent the problem. Matacq commissioning was postponed;
  - CDAQ in contact with CAEN support. We've actually provided CAEN with a patch resolving only one part of the bug.



# Problems encountered during commissioning (continued)



- Fluctuations of optical switch operation duration.
- Offline check of the data of the run taken in global mode, we've got less events per event batch (1 LME/1 event type) than expected, but the number is stable. Only known from yesterday night. Need more investigations.
- Difficulties we had to manage to run the DAQ reduced a lot the efficiency of our work.





# Coming work



- Fixing the problems described in the previous slides.
- Finalize Matacq commissioning.
- Prepare configuration and documentation for non-expert laser event data taking:
  - we would like to have soon regular gap event acquisition runs at P5.
- Testing central control mode of ECAL/DAQ/TCS: during the test DAQ and TCS were controlled from two different machines.
- Use of the dataset produced for the setting up the laser monitoring farm software.