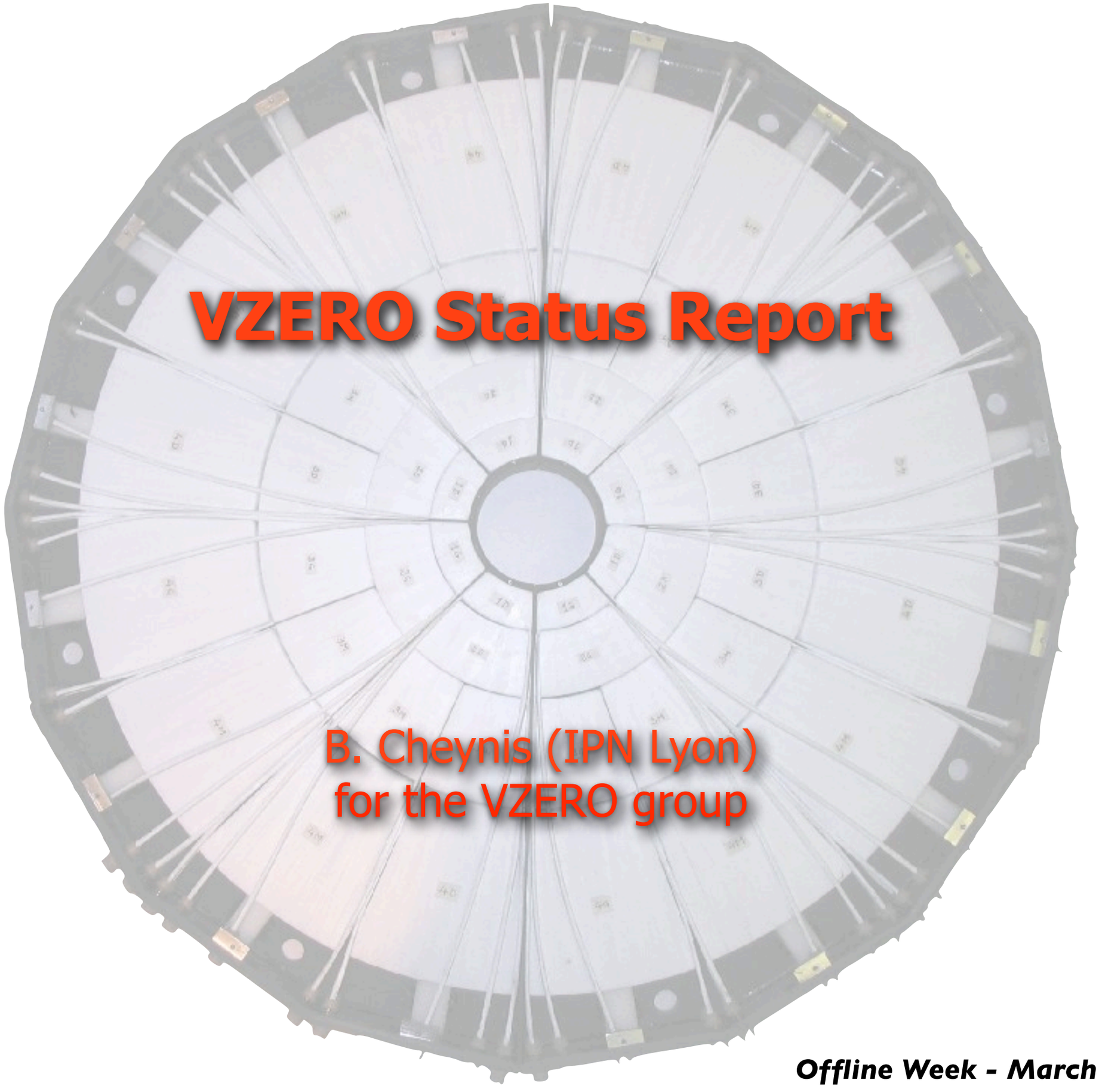


VZERO Status Report

B. Cheynis (IPN Lyon)
for the VZERO group

Offline Week - March 2009

Outline

- Geometry
- Simulation
- Calibration
- QA and Data Quality Monitoring
- Trigger simulation

Geometry

A change has been done in the geometry of V0A by Lizardo namely vertices have been redefined clockwise in class AliVZEROv7.

Changes did not affect the cell numbering.

The current situation is satisfactory.

Simulation

Time information is in Hits and Digits as time-of-flight values only.
No time width is estimated, is it needed ?

Implementation of track references in the step manager has been done and committed.

Are still to be done:

- Propagation of labels from kinematics tree for Hits, Sdigits, Digits

- Verification of merging procedure

Calibration

Calibration is achieved through Detector Algorithm VZEROda.

VZEROda is launched on the MON machine in PHYSICS Run Type.

Preprocessor retrieves pedestals computed by VZEROda and High Voltages values from DCS archive.

Both pedestal and High Voltage values are stored in OCDB and used in simulation and reconstruction.

Filling of the calibration file VZERO/Calib/Data in the OCDB needs to be checked now that the electronics has been reinstalled at P2.

QA and Data Quality Monitoring

In order to avoid code duplication we:

- put QA and DQM code in class AliVZEROQADataMakerRec
- used the QA "Expert" flag for the DQM histograms
- used the QA→*amore* interface developed and provided to us by Filimon and now Barthélémy
- developed the corresponding DQM GUI in the *amore* framework

Code has been committed and successfully checked replaying September 2008 data.

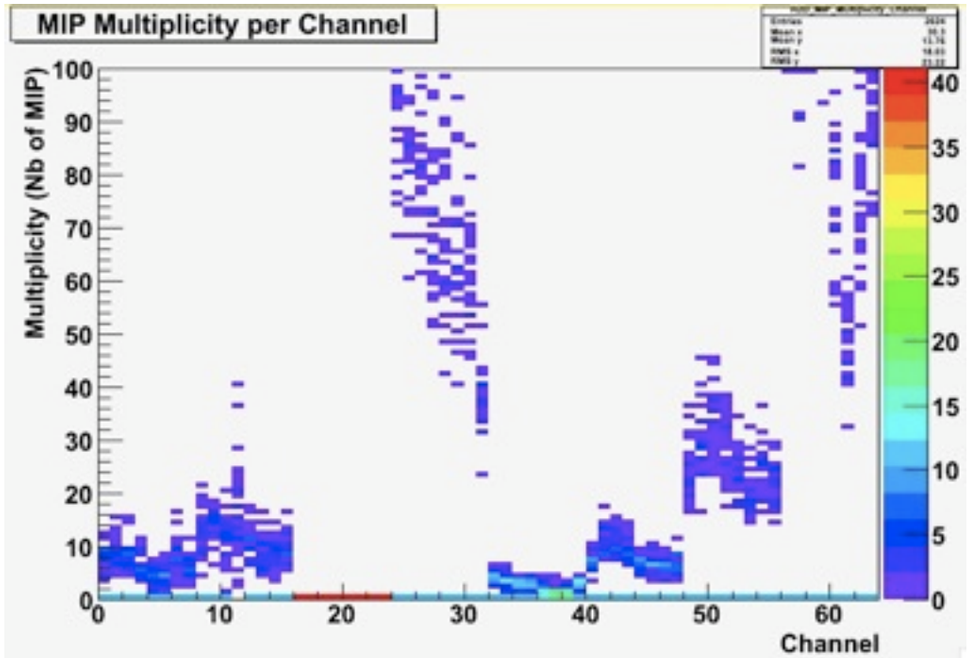
It has also been deployed at P2.

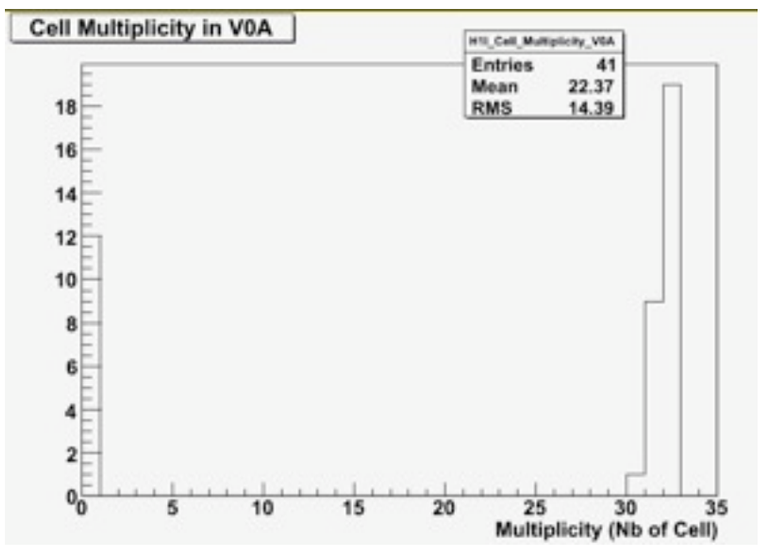
Reference data still need to be produced and stored.

VZERO QA - ESD

Monitored objects have been defined as:

- Cell Multiplicity in V0A and V0C
- MIP multiplicity in V0A and V0C
- MIP Multiplicity versus channel
- BB and BG flag counters
- Charge versus channel
- Time versus channel
- Mean time in V0A and V0C (in ns)
- Time difference V0A-V0C (in ns)



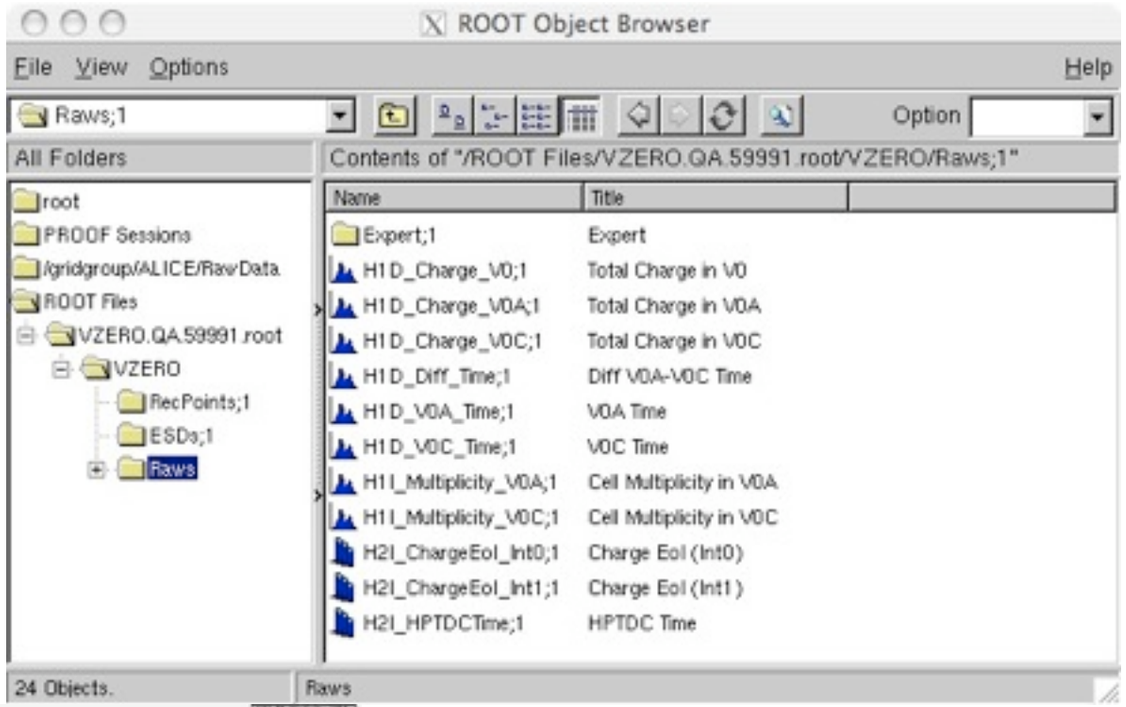


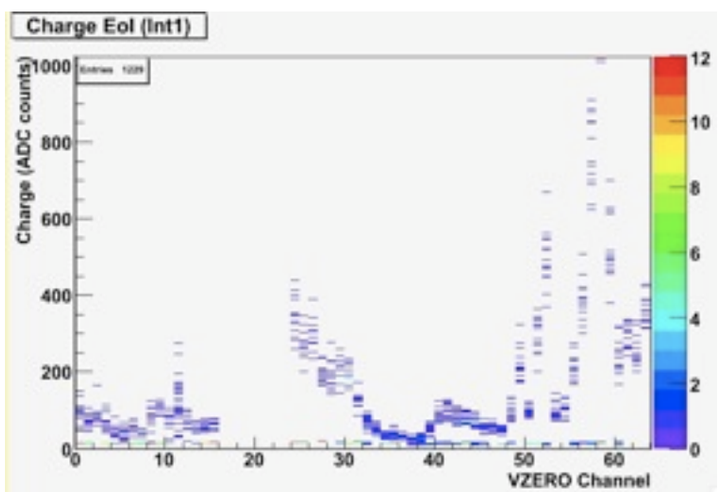
VZERO QA - RAW

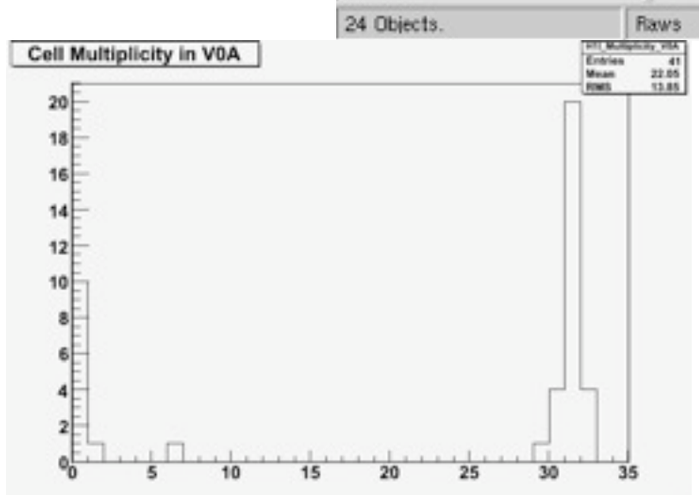
Monitored objects have been defined and implemented.

Global variables defined for **correlation** are:

- Cell Multiplicity in V0A and V0C
- Total charges in V0A, V0C, and V0
- Total MIP multiplicity in V0A, V0C, and V0
- V0A and V0C times
- Time difference V0A - V0C







VZERO QA / DQM

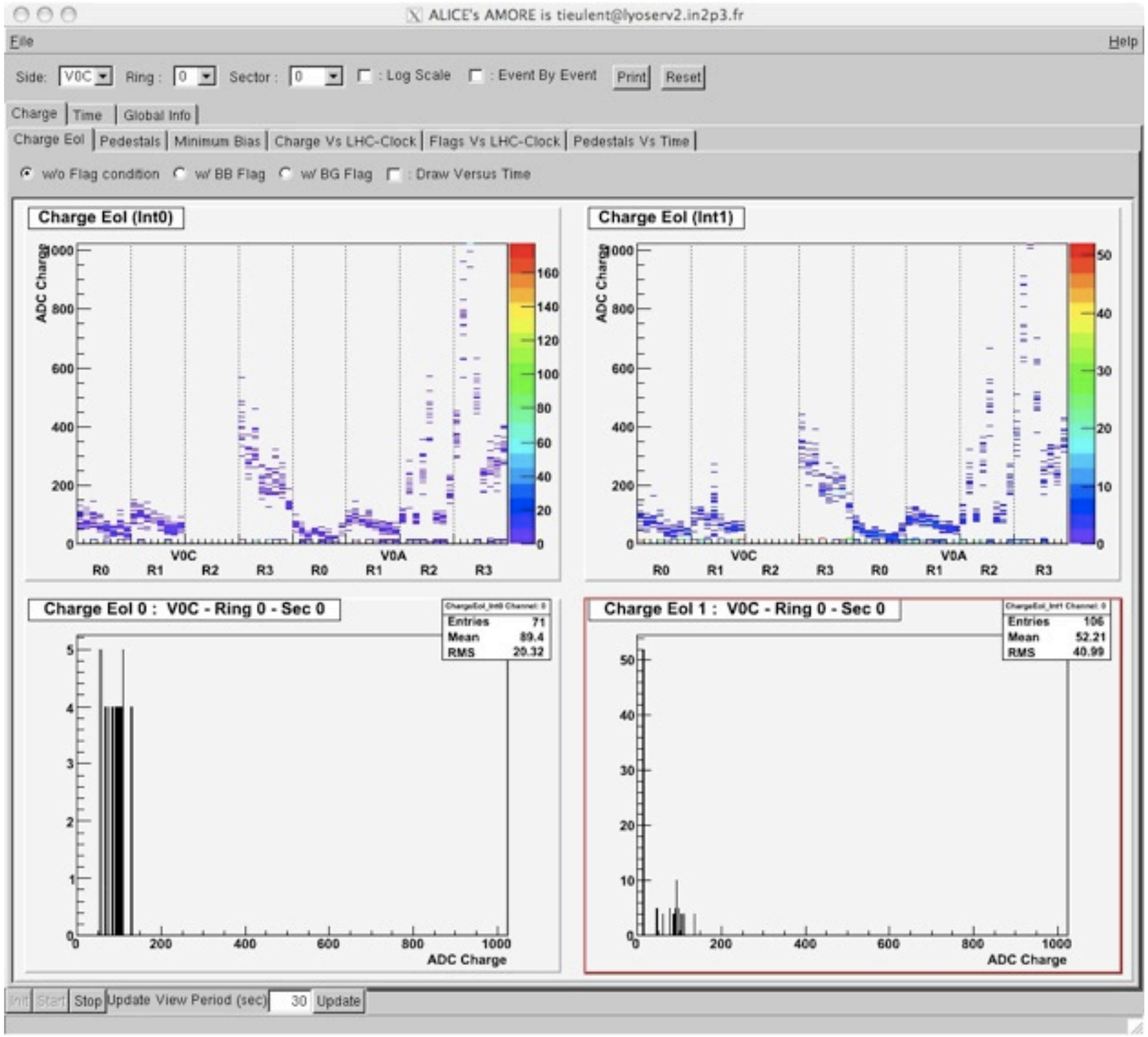
VZERO Data Quality Monitoring uses the **amore** framework and the **AliVZEROQADataMaker** class to produce the monitored objects (37 objects are monitored).

All QA RAW histograms are monitored, including all QA "non-expert" histograms plus:

- Pedestal % channel (+ time trend)
- ADC Charge % channel % LHC Clock (+ time trend)
- Flags % channel % LHC Clock
- Time % channel (with and without flag condition)
- Charge of Event-of-Interest % channel (with and without flag condition)

VZERO DQM

subscribes to all RAW objects defined in QA code

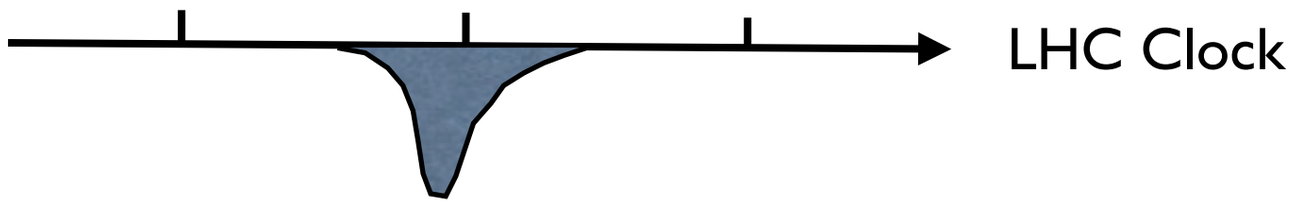


VZERO DQM - Cosmics

A new ***amore* agent** has been added, to be used in cosmics run:

as pulses are not synchronized with the LHC clock in cosmics data, we sum charges over 2 consecutive clocks in order to get the total charge.

Both *amore* agents have been put under version control in the *amore* svn repository (thanks to Barthélémy)



Trigger Simulation

Implementation of the trigger simulation is in progress, not completed yet.

(done by Raphaël)

Trigger information

VZERO FEE can provide 16 different triggers to CTP:

(1) BBA and BBC
(2) BBA or BBC
(3) BGA and BBC
(4) BGA
(5) BGC and BBA
(6) BGC
(7) BBA
(8) BBC
(9) BGA or BGC
(10) (BGA and BBC) or (BGC and BBA)

Use discriminator **threshold** and **timing** consideration channel by channel

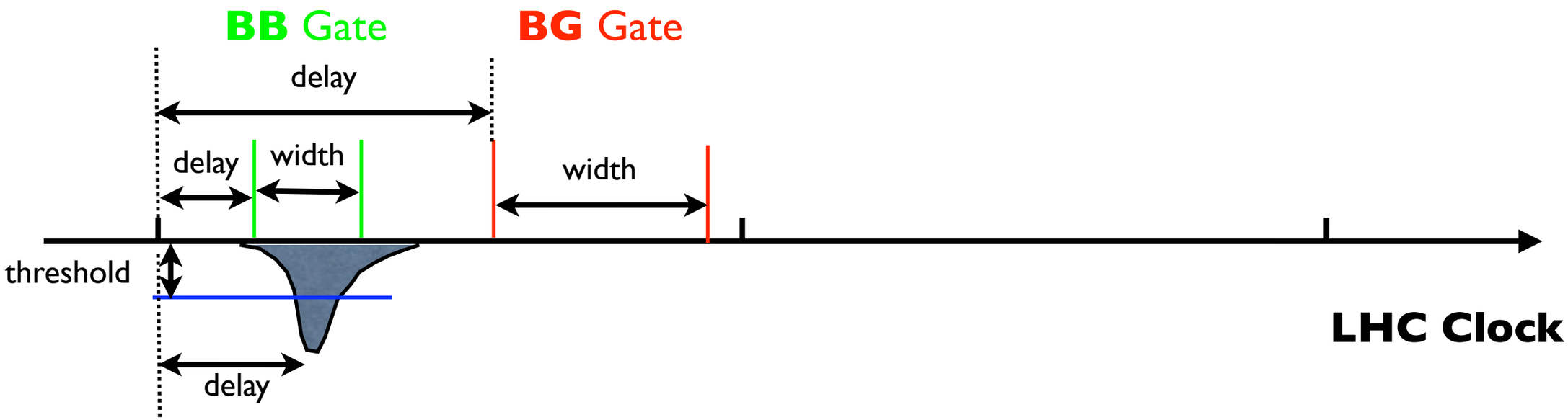
(11) CTA1 and CTC1
(12) CTA1 or CTC1
(13) CTA2 and CTC2
(14) CTA2 or CTC2

Use **charge** consideration per disk

(15) MTA or MTC
(16) MTA and MTC

Use cell **multiplicity** consideration per disk

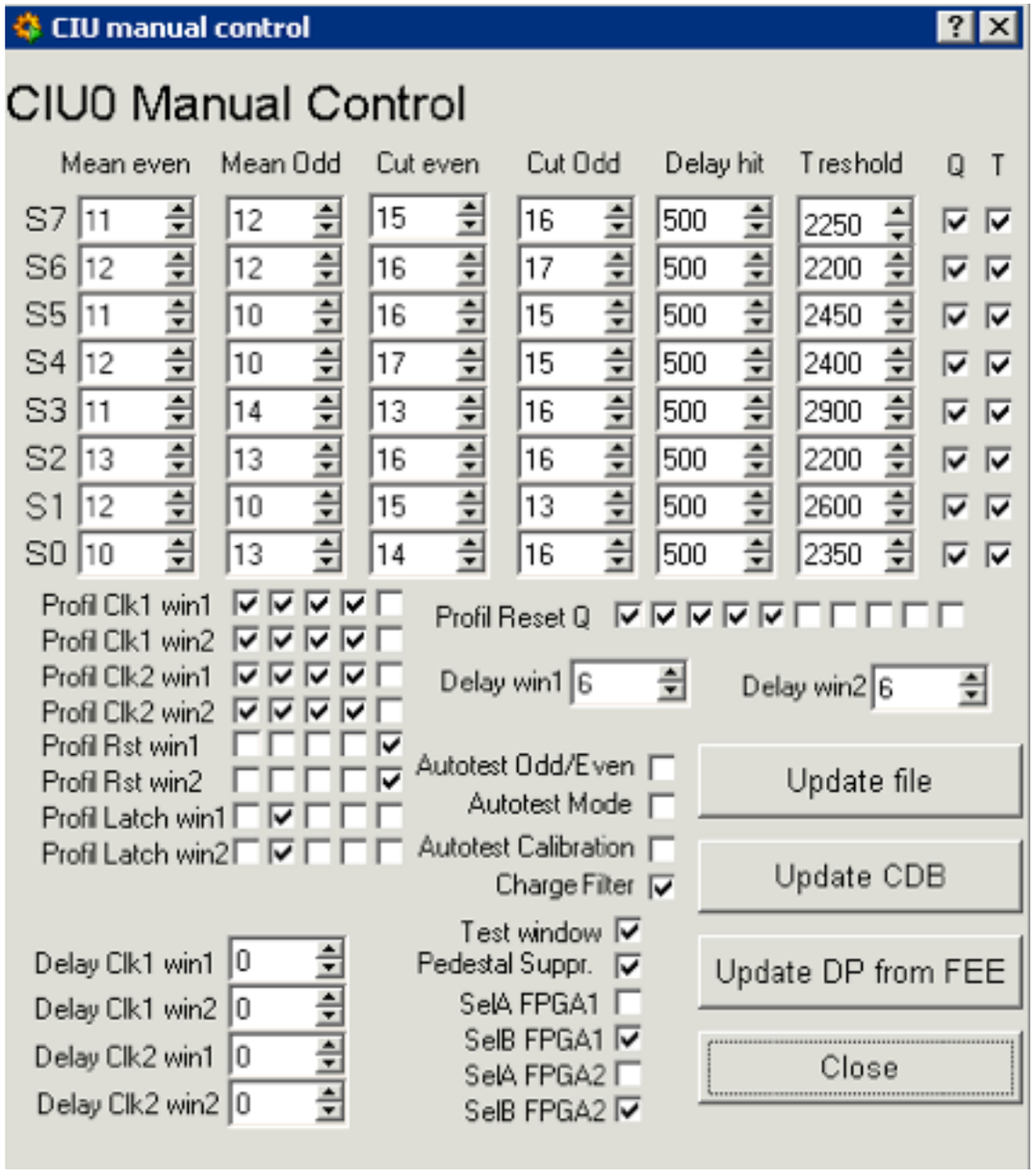
Trigger information

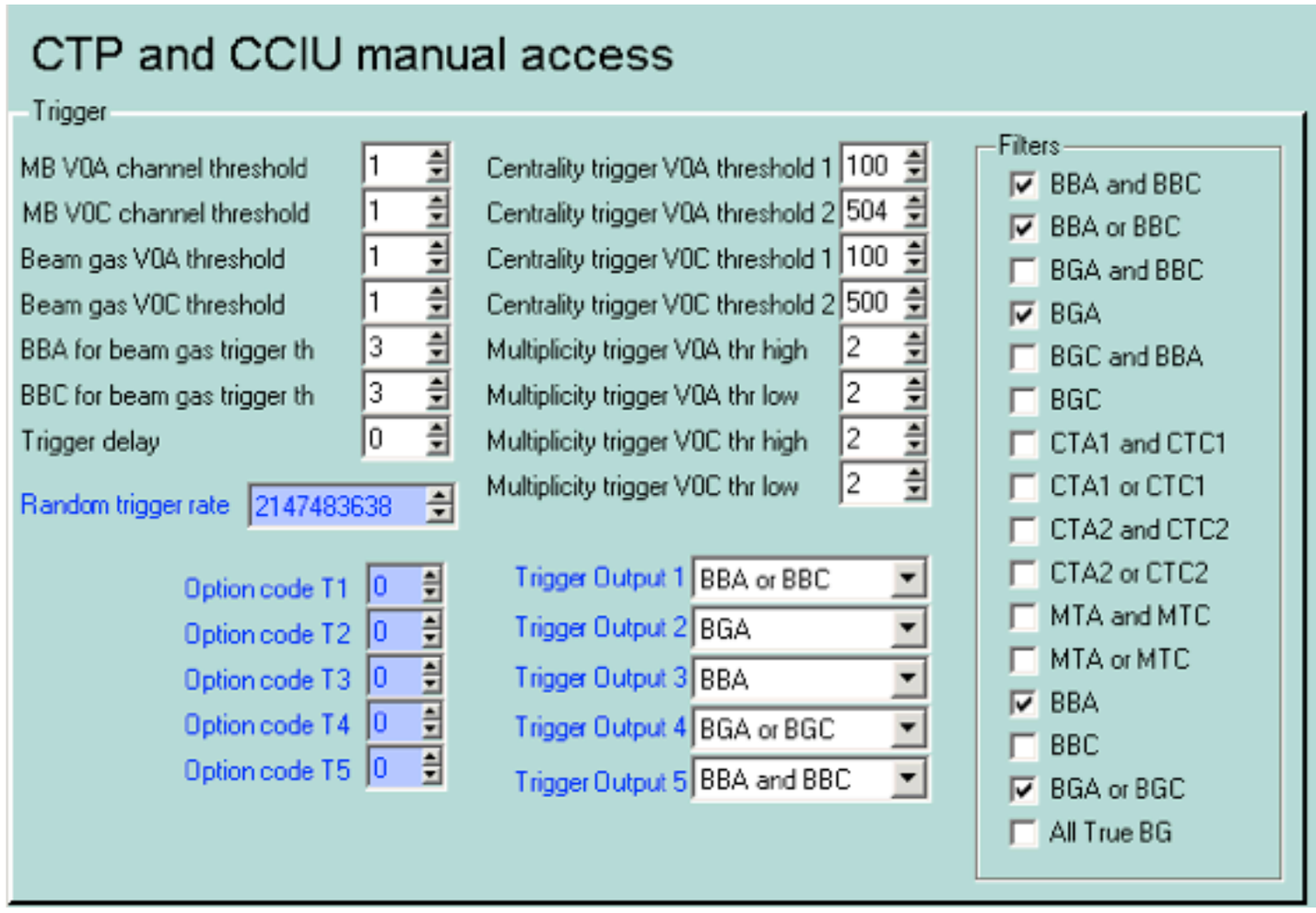


For each channel, the BB and BG flags are generated according to the amplitude and the timing of the pulse.

For each side, BB and BG flags are generated if the number of individual channel flags is above a given threshold.

FEE parameters related to online trigger generation





All these parameters, around 355 short integers, could be retrieved from DCS archive (and exported to the OCDB) to be used for generating ***offline triggers***.

Trigger simulation - under discussion, work in progress -

- Retrieve from DCS or from OCDB the FEE parameters for a given run in order to define the ”observation windows” (time windows) and retrieve the current charge thresholds and multiplicity thresholds

- Read reconstructed RAW data (pedestals subtracted, multiplicities estimated) in ESD Tree

- Generate the offline triggers:

BBA, BBC, BGA, BGC, and logically derived triggers (10 triggers)
by checking the HPTDC value with respect to the corresponding observation windows

CTAx, CTCx, and logically derived triggers (4 triggers)
by checking the total charge in each disk with respect to the charge thresholds

MTA, MTC, and logically derived triggers (2 triggers)
by checking multiplicities in each disk with respect to the multiplicity thresholds