

The ALICE AMORE SPD GUI

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CERN

The ALICE AMORE SPD GUI

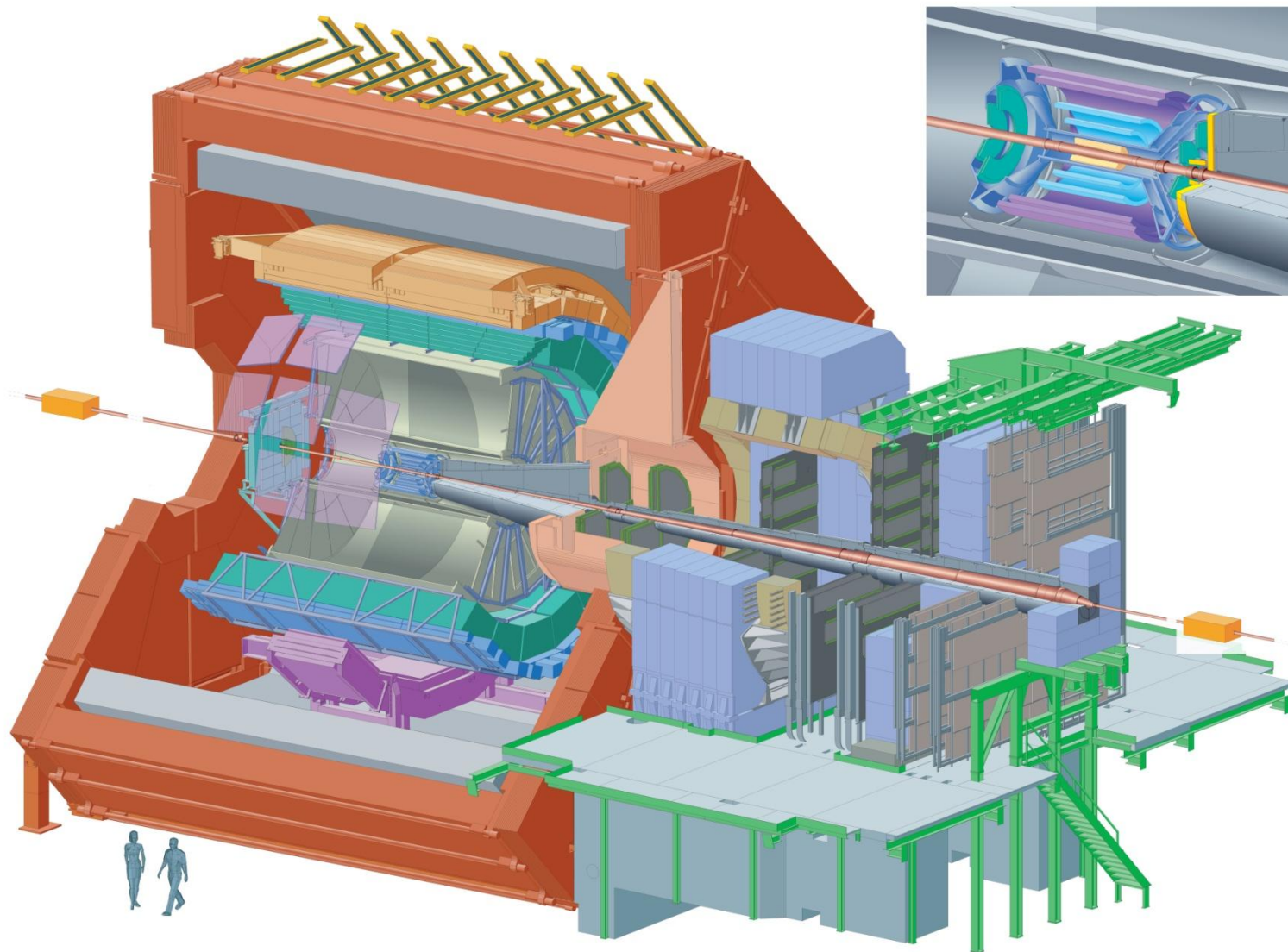
ALICE

A Large Ion Collider Experiment

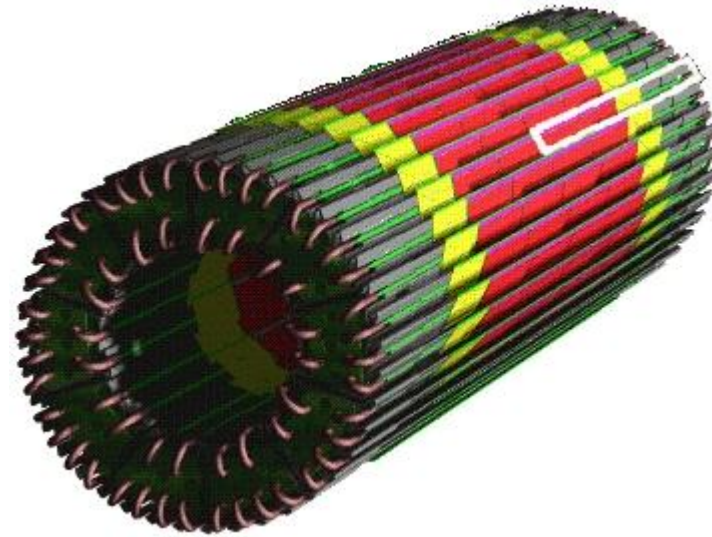
SPD

Silicon Pixel Detector

ALICE SPD



ALICE SPD



SPD in Numbers

1200
read out chips

240 sensors



240
Bump bonded ladders

120 MCMs

120 pixel buses



120 half-staves

120 power extenders
(x2: pixel bus +MCM)



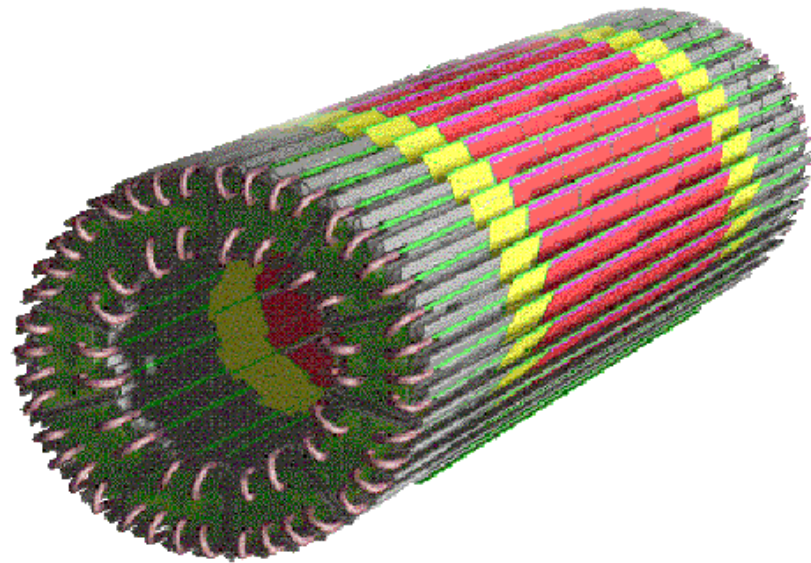
10 sectors



2 half-barrels



ALICE SPD



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ALICE

A Large Ion Collider Experiment

AMORE

Automatic **MONitoring Environment**

SPD

Silicon **P**ixel **D**etector

GUI

Graphical **U**ser **I**nterface

Motivation

for switching from “SPD Mood” to “AMORE SPD”

Amount of histograms

Problem: SPD Mood contains a lot (2000!) histograms.

Solution: Automatic checks, less histograms.

Motivation

for switching from "SPD Mood" to "AMORE SPD"

The screenshot displays the SPD-MOOD v4.09 software interface. At the top, there are menu options: File, Settings, Operations, Pixel Masking. The status bar indicates 20 equipments active, 0 pixels masked, and 0 error messages suppressed. Below this is a control panel with buttons for LOGOUT, RUN, RUN UNTIL EVENT, RUN N EVENTS, RUN ONE EVENT, RESET ERROR FLAG, UPDATE ALL, SCREEN-SHOT ALL, CLOSE ALL, and RESET ALL. A message box shows 'Data inconsistent' with a file path and event information. Further down, there are buttons for AUTO-UPDATE ALL, AUTO-RESET ALL, SKIP PIXEL DATA, and SKIP CLUSTERING, along with DISP INCONS EVENTS, STOP ON ERROR, and SKIP ADV EVCOUNT CHECK.

The main area is titled 'SPD-MOOD Setup' and contains several sections:

- Global Displays:** Pixel Displays, FastOR Displays, Cons Error Displays, Dump Displays.
- Clusters:** A table with columns for Clusters, Pixel Displays, and Other. Each cluster has checkboxes for '+ ALL', '- ALL', and 'SHOW ALL'. Clusters include Clu XY, Clu ZY, Clu XYZ, Clu Mult, Clu Inner vs Outer, Clu Per Eq Inner, Clu Per Eq Outer, Clu Per HS Side A, Clu Per HS Side C, Clu Per Stave, Clu Size Inner, Clu Size Outer, Clu Type Inner, Clu Type Outer, Clu Wid Z, Clu Wid Phi, Clu Wid Z vs Phi Inner, and Clu Wid Z vs Phi Outer.
- Pixel Displays:** A table with columns for Pixels and Other. Each pixel has checkboxes for '+ ALL', '- ALL', and 'SHOW ALL'. Pixels include Pix XY, Pix ZY, Pix XYZ, Pix Mult, Pix Mult HS, Pix Mult Chip, Pix Phi, Pix Z, Pix Phi Ref, and Pix Z Ref.
- Other:** A table with columns for Other and Other. Each other category has checkboxes for '+ ALL', '- ALL', and 'SHOW ALL'. Other categories include BC mod 4, FO Missing BCmod4=0, FO Missing BCmod4=1, FO Missing BCmod4=2, and FO Missing BCmod4=3.
- Pixel Multiplicity Per Event:** A plot showing Pixel Hits (0 to 600) versus Event Number (0 to 1200). The plot is titled 'Pixel Multiplicity (black=full, red=outer, blue=inner layer)'.

At the bottom, there are several event display windows, each showing a histogram of data for a specific event. The windows are labeled with event numbers and names like 'Events W', 'Events', 'Events With I', 'Events With', 'Events With H', and 'Events With Hi'.

Motivation

for switching from “SPD Mood” to “AMORE SPD”

Amount of histograms

Problem: SPD Mood contains a lot (2000!) histograms.

Solution: Automatic checks, less histograms.

Adjustability

AMORE SPD is able to satisfy the requirements and it is easy to maintain.

ALICE's AMORE is

File Help

SIDE A
 Eq 0
 Eq 1
 Eq 2
 Eq 3
 Eq 4
 Eq 5
 Eq 6
 Eq 7
 Eq 8
 Eq 9

SIDE C
 Eq 10
 Eq 11
 Eq 12
 Eq 13
 Eq 14
 Eq 15
 Eq 16
 Eq 17
 Eq 18
 Eq 19

Inner HS
 HS 0
 HS 1

Outer HS
 HS 2
 HS 3
 HS 4
 HS 5

Select ALL
 All HS
 All Eq

Options
 Ratio
 Scaled

FastOr / Hits Overview

FastOr
Missing FO
Noisy FO
FO Yield
Missing FO
BCMod4
BCMod4=0

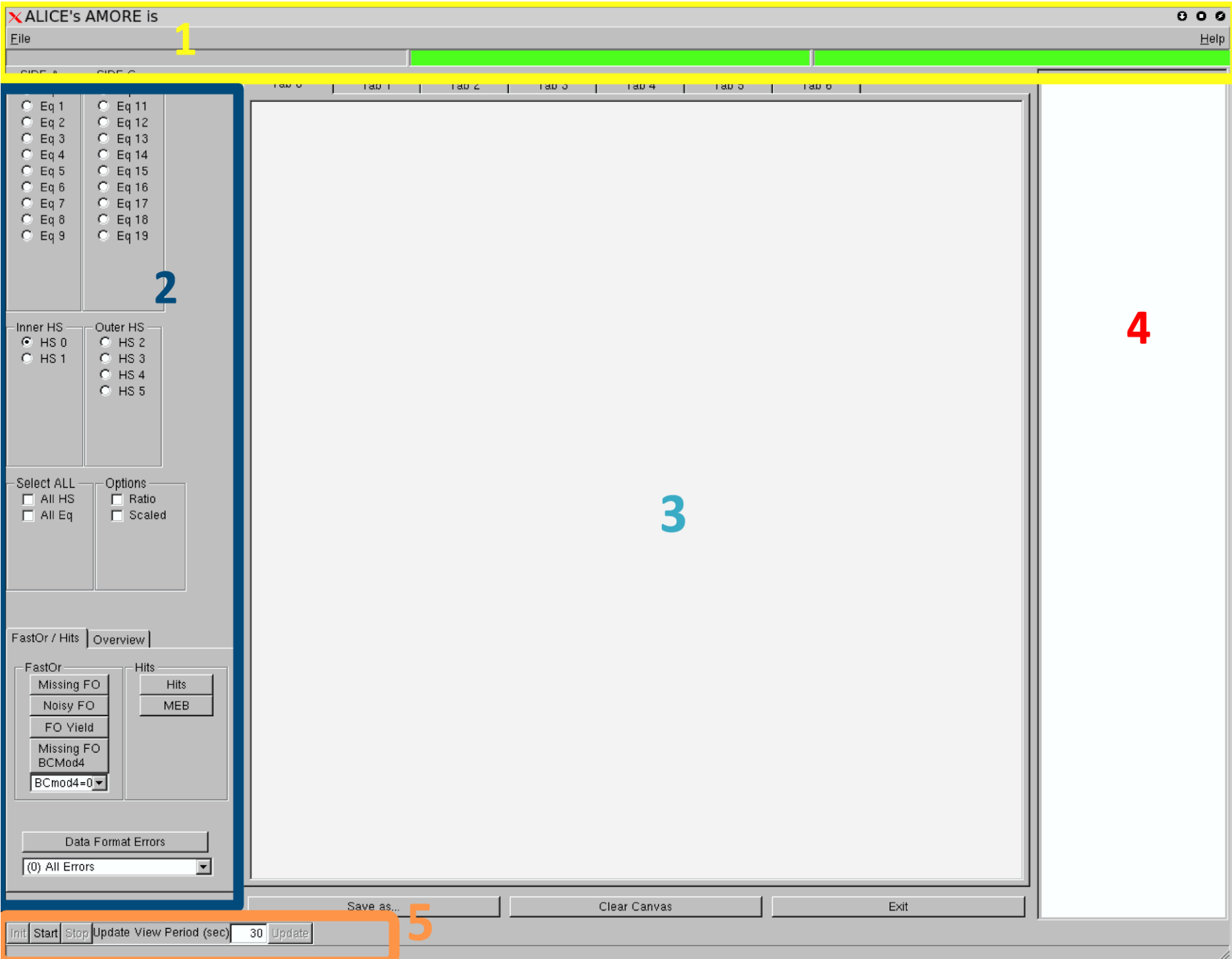
Hits
Hits
MEB

Data Format Errors
(0) All Errors

Tab 0 **Tab 1** Tab 2 Tab 3 Tab 4 Tab 5 Tab 6

Save as... Clear Canvas Exit

Init Start Stop Update View Period (sec) 30 Update



Run Number 115892 - Processed Events 156

amore/amoreAgentSPDHits: running

Data Format Error!

- SIDE A
- Eq 0
 - Eq 1
 - Eq 2
 - Eq 3
 - Eq 4
 - Eq 5
 - Eq 6
 - Eq 7
 - Eq 8
 - Eq 9
- SIDE C
- Eq 10
 - Eq 11
 - Eq 12
 - Eq 13
 - Eq 14
 - Eq 15
 - Eq 16
 - Eq 17
 - Eq 18
 - Eq 19

- Inner HS
- HS 0
 - HS 1
- Outer HS
- HS 2
 - HS 3
 - HS 4
 - HS 5

- Select ALL
- All HS
 - All Eq
- Options
- Ratio
 - Scaled

FastOr / Hits Overview

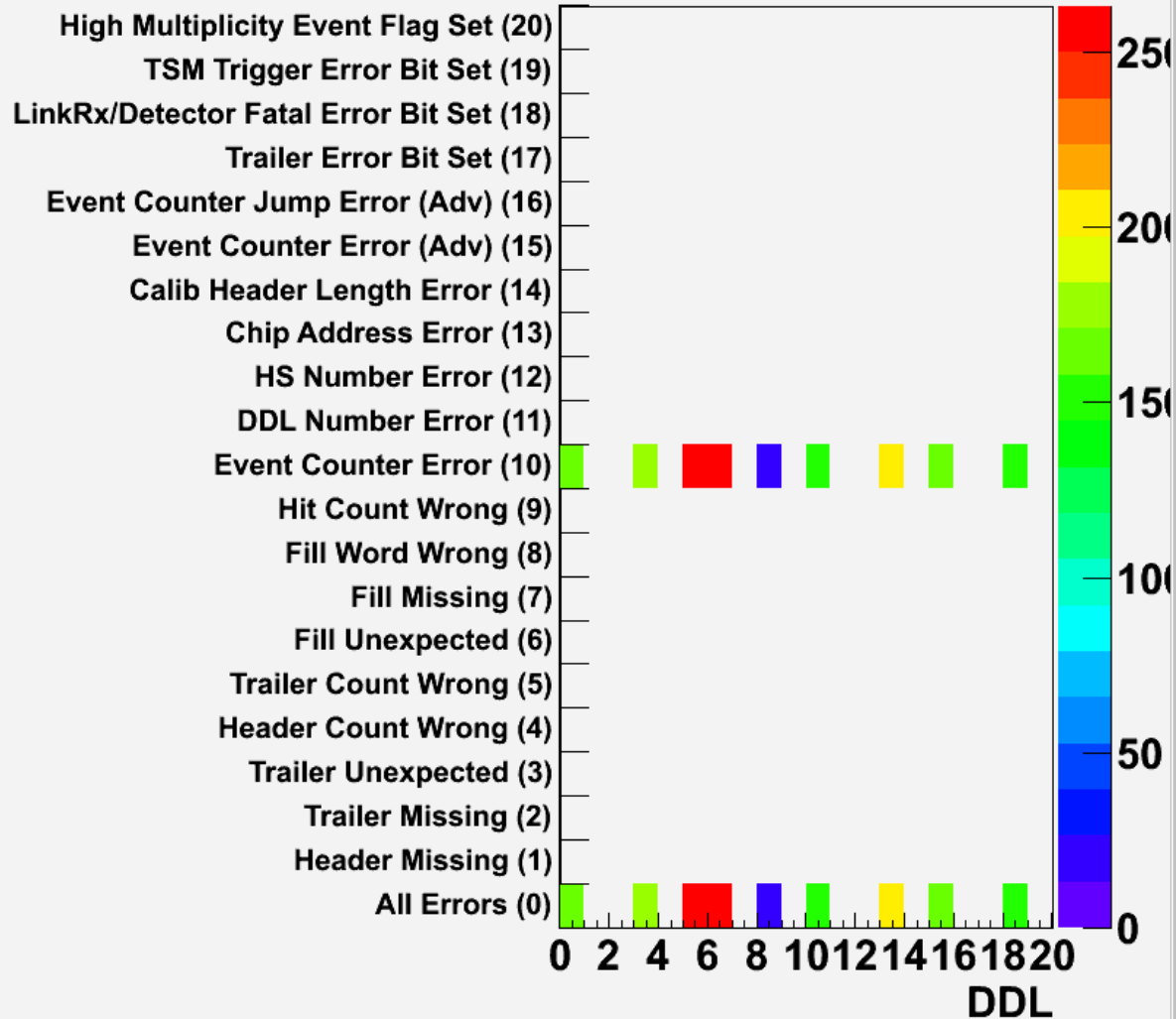
- FastOr
- Missing FO
 - Noisy FO
 - FO Yield
 - Missing FO BcMod4
 - BCmod4=0
- Hits
- Hits
 - MEB

Data Format Errors

(0) All Errors

Data Format Errors Tab 1 Tab 2 Tab 3 Tab 4 Tab 5 Tab 6

Data Format Errors



```
-----
Data Format Error
Error 10 in Eq 0
Error 10 in Eq 3
Error 10 in Eq 5
Error 10 in Eq 6
Error 10 in Eq 8
Error 10 in Eq 10
Error 10 in Eq 13
Error 10 in Eq 15
Error 10 in Eq 18
-----
```

MEB

***** NOISY PIXELS *****

Eq hs chip | col row

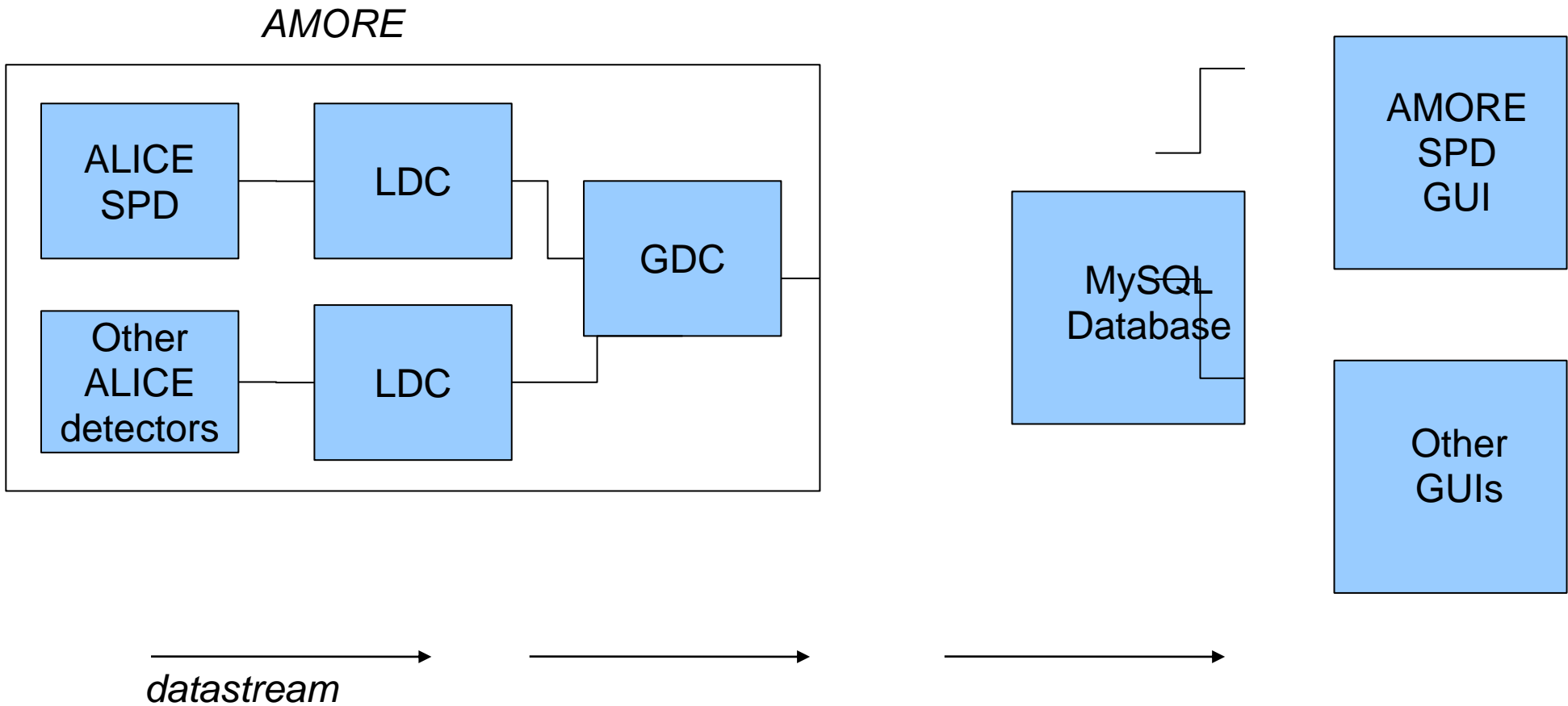
Save as...

Clear Canvas

Exit

Init Start Stop Update View Period (sec) 120 Update

Data flow



The Really Important Stuff: SPD Songs

When you are in shift you are bound to encounter problems, errors and other natural disasters. If that is the case, do not despair, but rather sing the following songs aloud: the problems will still be there but you'll earn a lot of respect-points from the other detectors (the louder the better).

La Marcia del Cooling (ITA)

Chorus: e riempilo, riempilo, riempilo (x3)
tutto il tank!

L'abbiam riempito tutto,
E non gli ha fatto male.
Il cooling funziona
e domani puo' rannare!

L'Inno del SPD (ITA)

L'Esspidi sta ... senza corente,
ma quando ranna' ... il DAQ ne risente.
ALICE nun fa' ... la stupida sta sera,
damme na mano ... a fa' fini' sto scift!

E noi je doooooooooooooooooooooamo
e noi je faaaaaaaaaaaaaaaaaaamo
c'hai messo il masking ...
nun ce fidiamo ...
Tanto per setta' ... tanto per ranna'! (x3)

Il Grande Fascio (ITA)

Trema,
tutto l'acceleratore
Dalla Fortezza della Scienza arriva
Con i suoi grassi tevatroni, il fascio!
ad ALICE, il fascio!
ad ALICE, il fascio!

Vola,
Si tuffa da Maurin giu' in picchiata

When you are in shift you are bound to encounter problems, errors and other natural disasters. If that is the case, do not despair, but rather sing the following songs aloud.

The problems will still be there, but you'll earn a lot of respect-points from the other detectors.

(the louder the better)

Conclusion

Goal of my Summer Student project is to improve the data monitoring software of the ALICE SPD.

This involves programming, working with the shifters and keeping track of the physics requirements.

Most of the improvements have now been implemented.

Further reading

twiki.cern.ch/twiki/bin/view/AliceSPD

aliceinfo.cern.ch/SPD

alice-logbook.cern.ch/
(CERN account required)