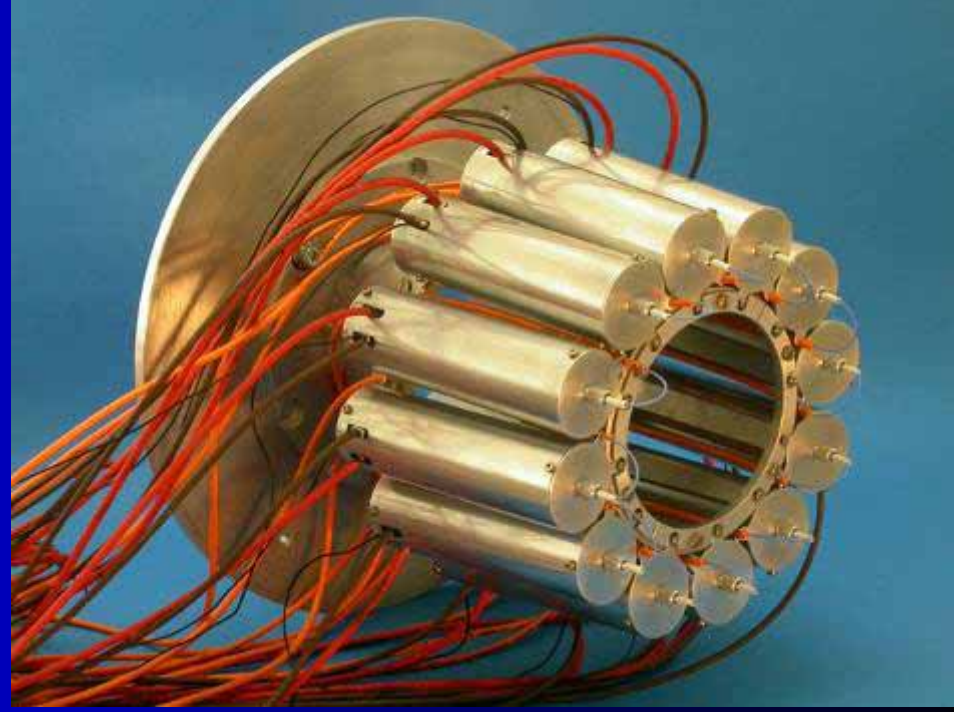
T0
DCS Status



DCS Workshop
9-10 October 2006
T.Karavicheva
for the T0 group

T0 DCS People

T.L.Karavicheva	Institute for Nuclear Research , Moscow
A.N.Kurepin	Institute for Nuclear Research , Moscow
Radomir Kupczak	Warsaw University of Technology, Faculty of Physics
Marcin Zaremba	Warsaw University of Technology, Faculty of Physics

Outline

– T0 detector

– T0 DCS

- T0-A/T0-C
  - -Fast Electronics
  - -HV/LV
- Readout Electronics
- L0 trigger generator
- Laser system
- Crate control

– T0 FSM

– T0 calibration (preliminary)

T0 detector milestones

T0-A commissioning (beam run at CERN)	October 2006
T0-C installation	January 2007
Electronics production completed	February 2007
T0-A installation	June 2007 ?

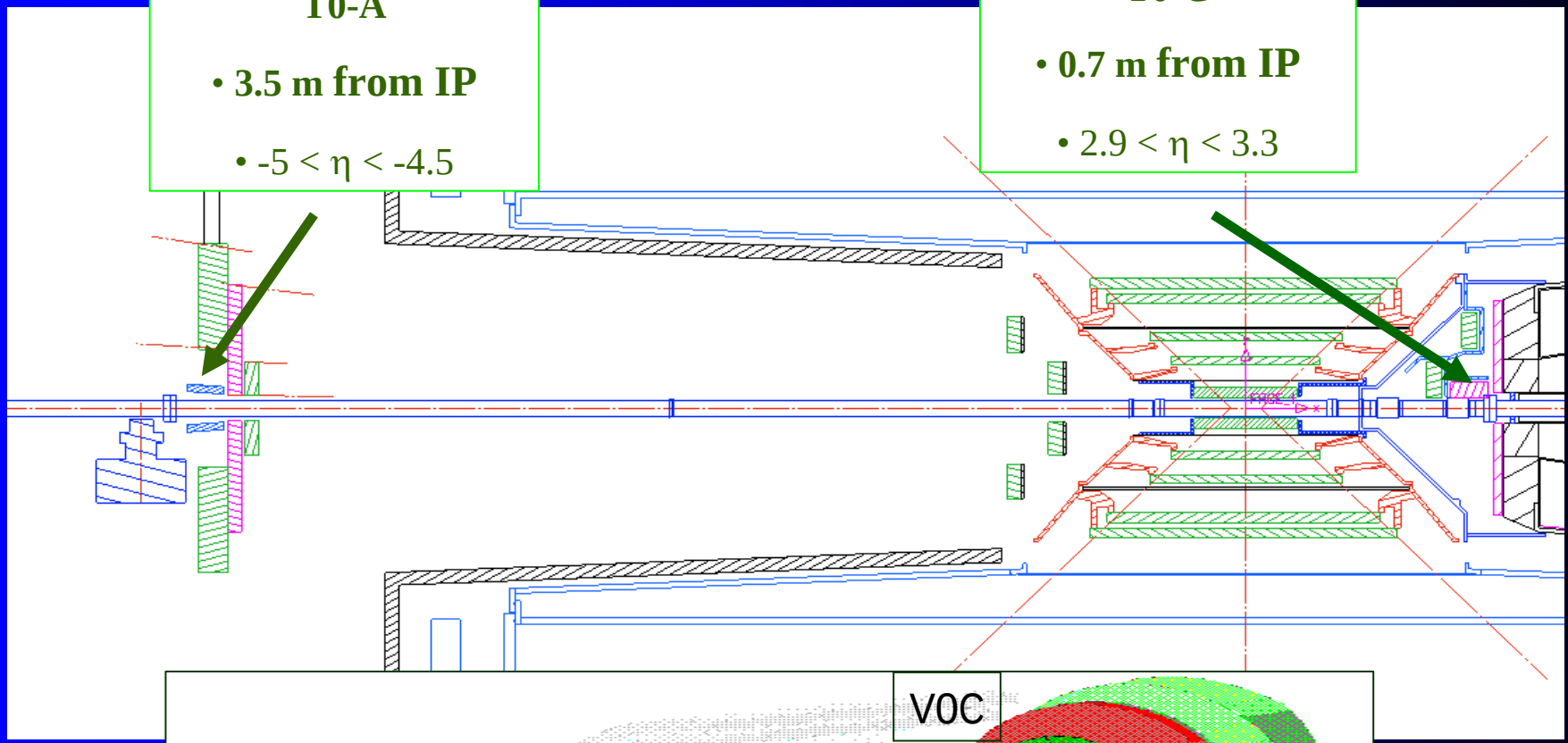
T0 reminder

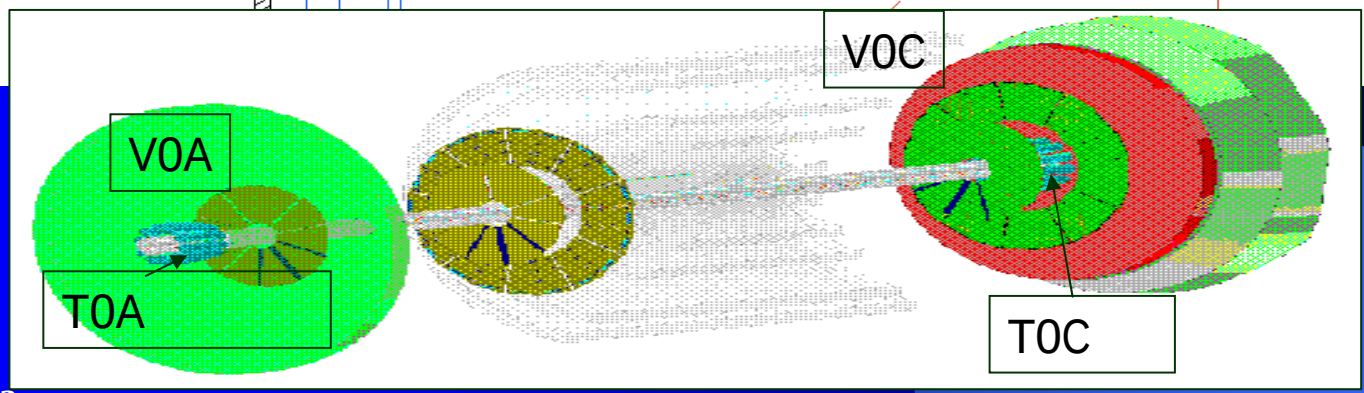
T0-A

- **3.5 m from IP**
- $-5 < \eta < -4.5$

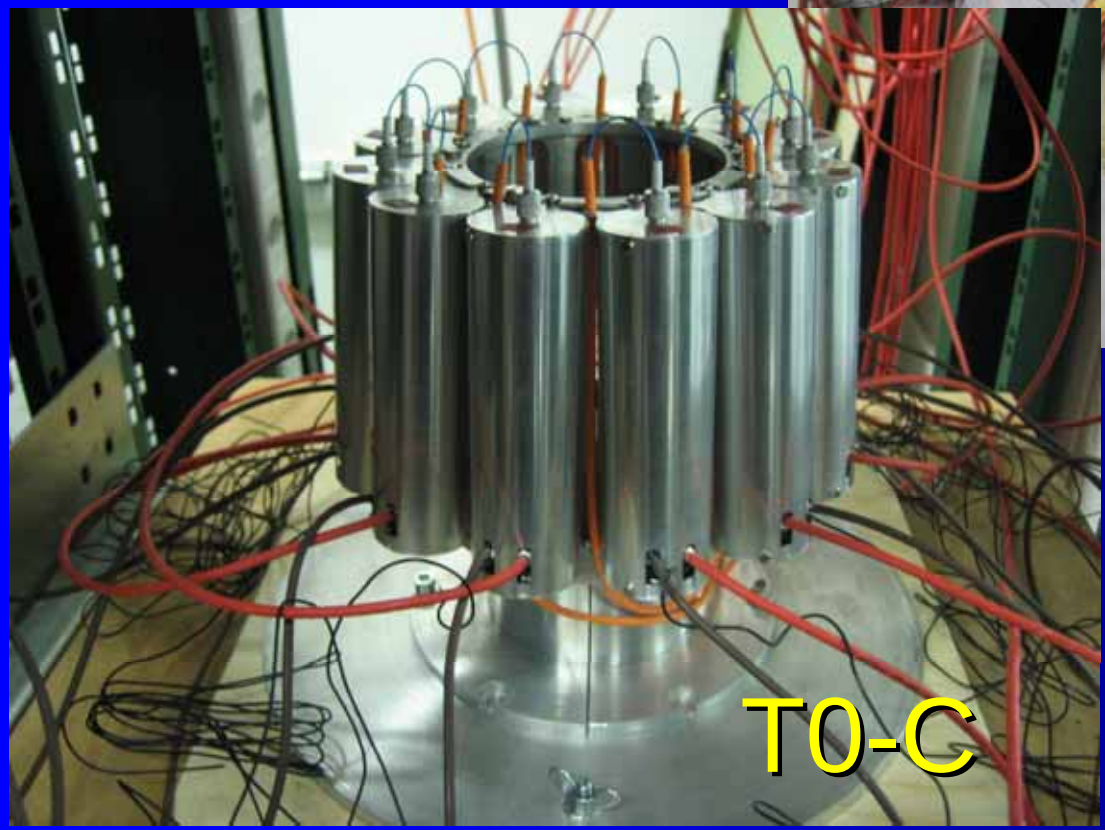
T0-C

- **0.7 m from IP**
- $2.9 < \eta < 3.3$





T0-C & T0-A delivered at CERN

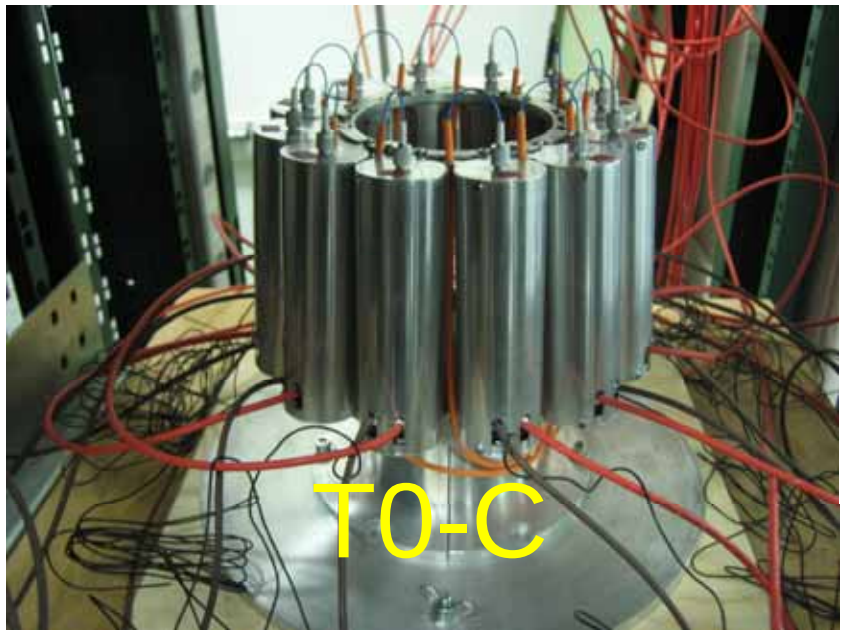


Beam test is going

October 2006 test beam

DCS

Trigger

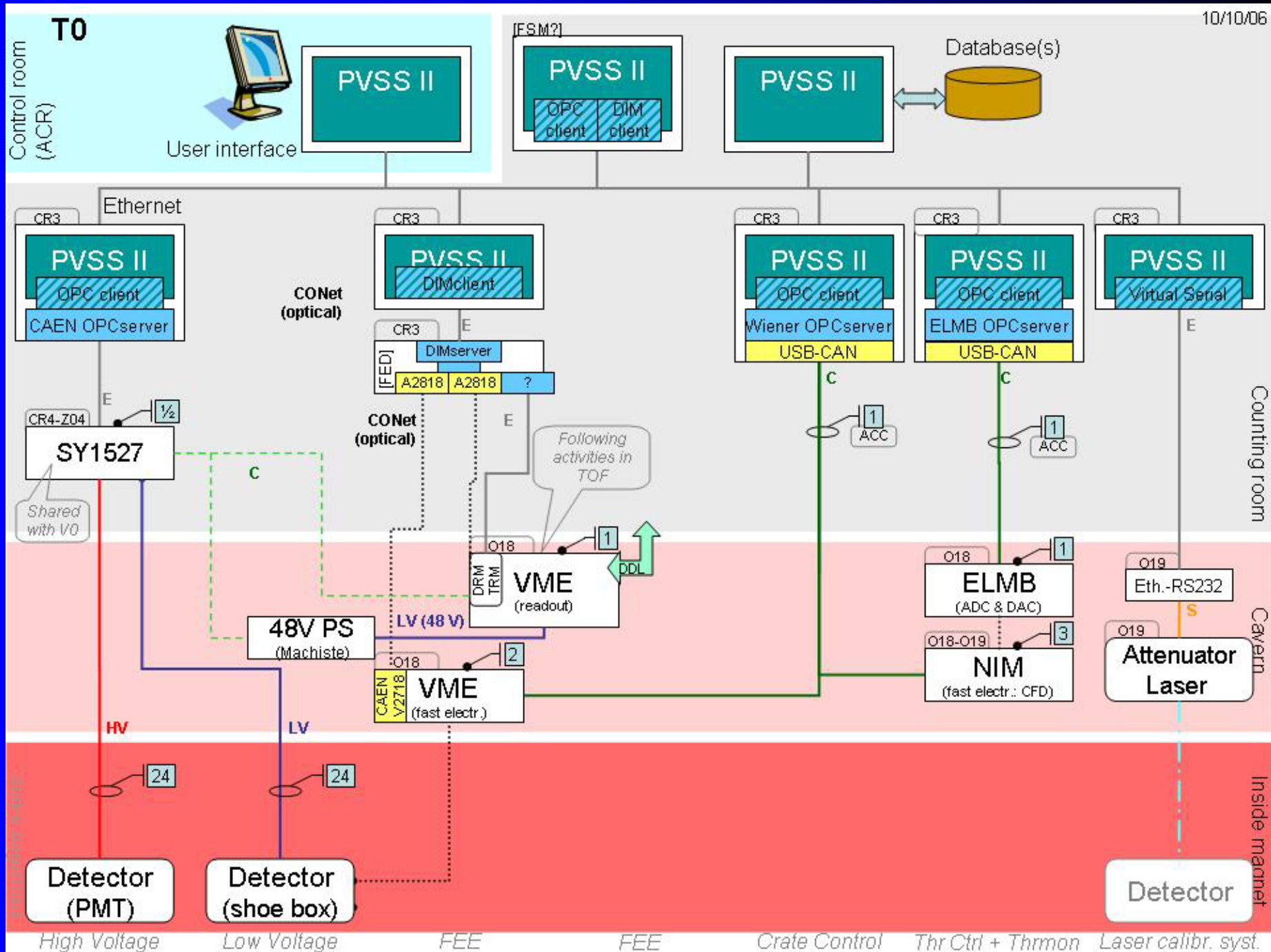


DAQ

Offline

ECS

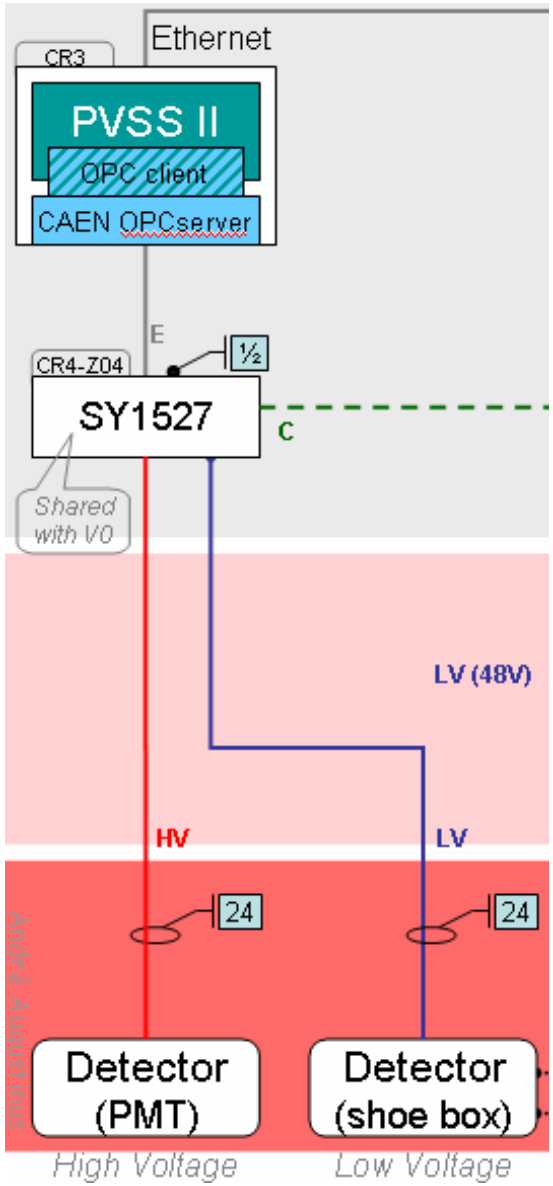
Not yet used


T0
10/10/06
Control room (ACR)
User interface
PVSS II
[FSM?]
PVSS II
OPC client
DIM client
PVSS II
Database(s)
Ethernet
CR3
PVSS II
OPC client
CAEN OPCserver
CONet (optical)
CR3
PVSS II
DIMclient
CR3
[FED]
DIMserver
A2818
A2818
?
CONet (optical)
CR3
PVSS II
OPC client
Wiener OPCserver
USB-CAN
CR3
PVSS II
OPC client
ELMB OPCserver
USB-CAN
CR3
PVSS II
Virtual Serial
E
C
CR4-Z04
½
SY1527
Shared with V0
1
ACC
1
ACC
Following activities in TOF
O18
DRM TRM
VME
(readout)
1
DDL
O18
1
ELMB
(ADC & DAC)
O19
Eth.-RS232
S
48V PS
(Machiste)
LV (48 V)
O18
CAEN V2718
VME
(fast electr.)
2
O18-O19
3
NIM
(fast electr.: CFD)
O19
Attenuator Laser
HV
LV
24
24
Detector (PMT)
Detector (shoe box)
Detector
Counting room
Cavern
Inside magnet
High Voltage
Low Voltage
FEE
FEE
Crate Control
Thr Ctrl + Thrmon
Laser calibr. syst.

New requirements:

- 1 A1676 board has to be mounted in T0 SY1527 (it is the control interface of the DC/DC inside the VME crate)
- 1 A3484S power supply (this is the 48V power supply, with remote controller)
- 1 A3000NF this is a special filter requested by CERN to CAEN to be paired with the A3484S

Status [HV/LV]



Ordered :

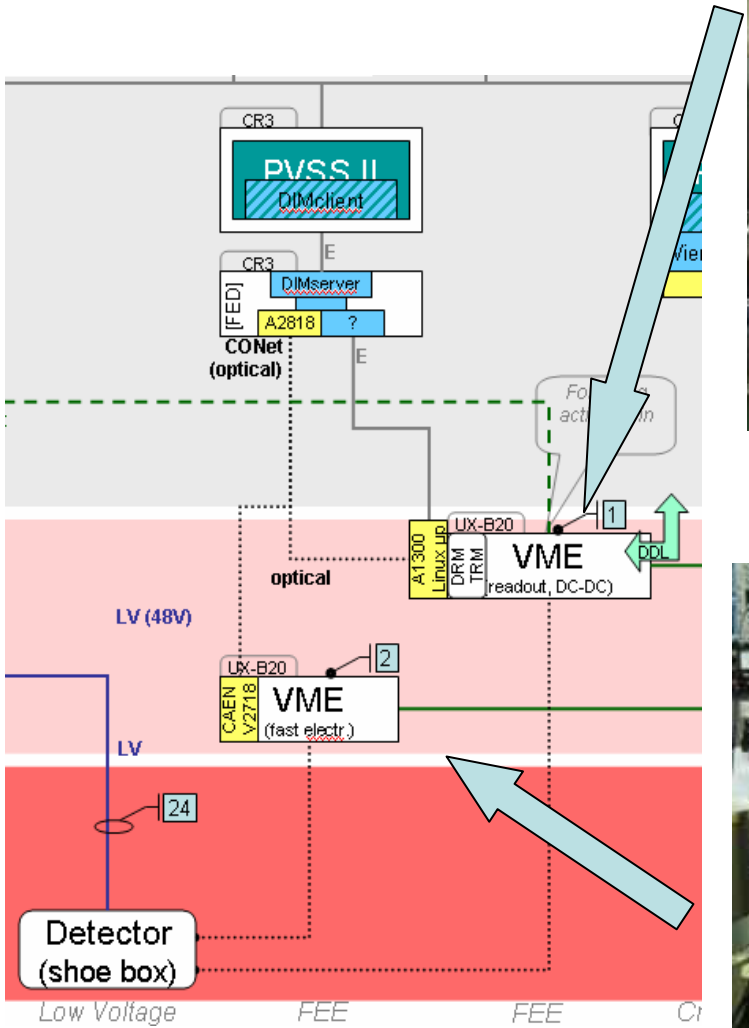
-SY1527

-4 x A1533 LV Power Supply Unit, 6x10V/2.7A

- 3 x A1733N Power Supply Units

Standard: PVSS 3.1 +
Framework + OPC 2.12 + FSM
Customized user

Status [Fast and Readout electronics]



Delivered at CERN:

-2 TRM

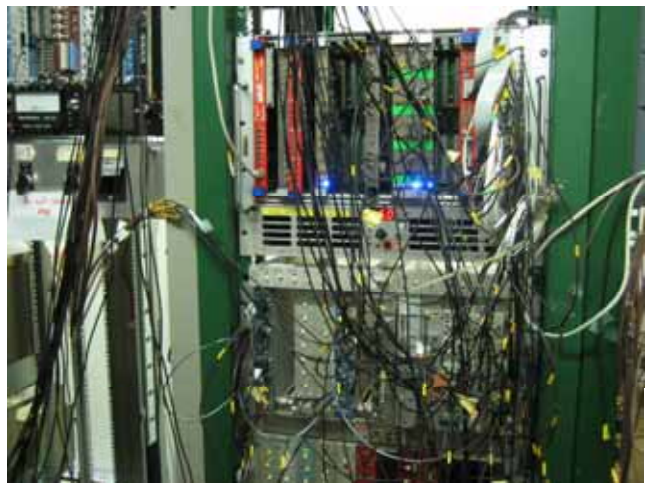
-1 CPDM

- 2 A2818 cards

Not yet

-VME crate

-DRM



Delivered at CERN:

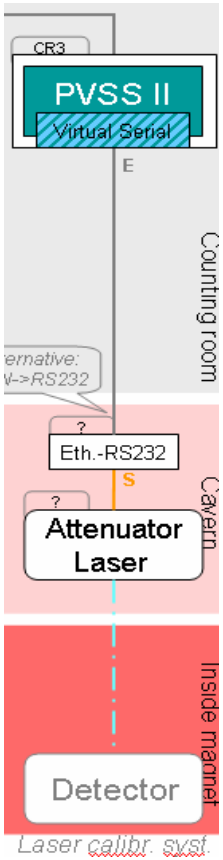
-all types of electronics module for detector test

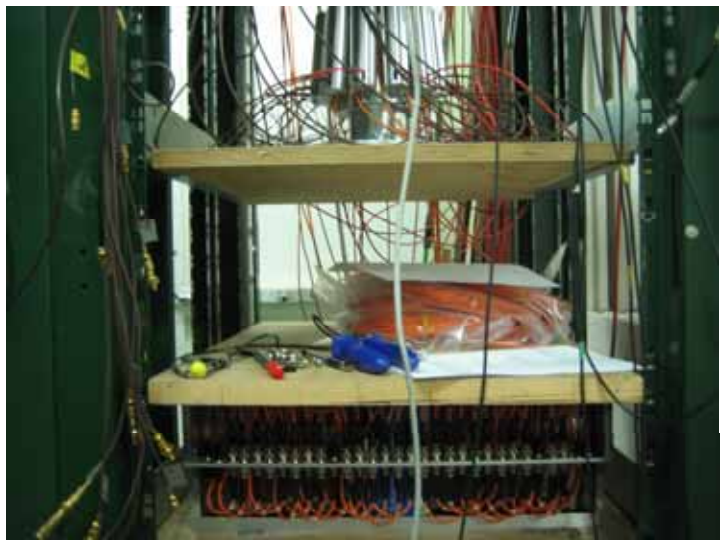
Not yet

-VME crates(ordered)

-NIM crates

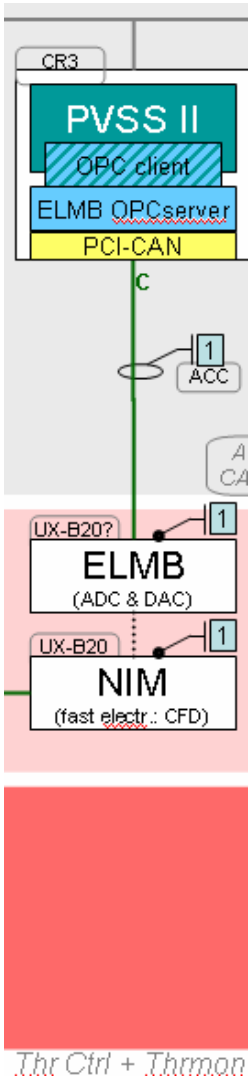
Status [Laser Calibration]

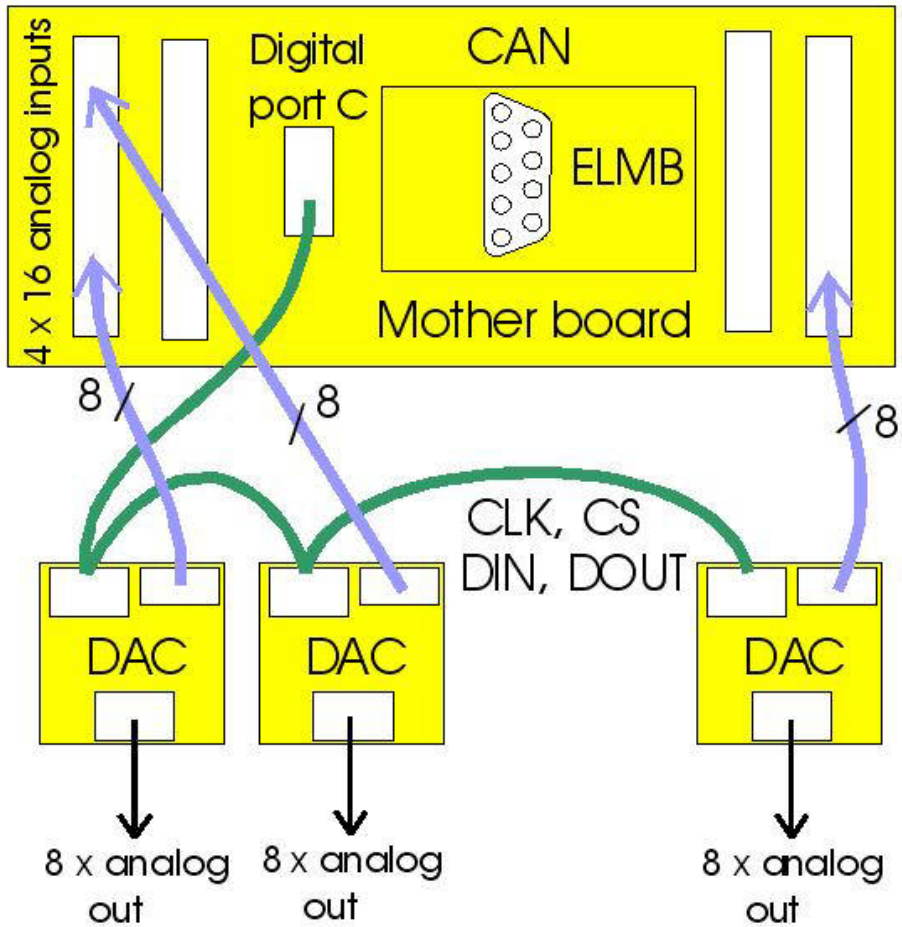




Ethernet-RS232 interface (Digi One)

Status [ELMB+6xDAC for CFD]



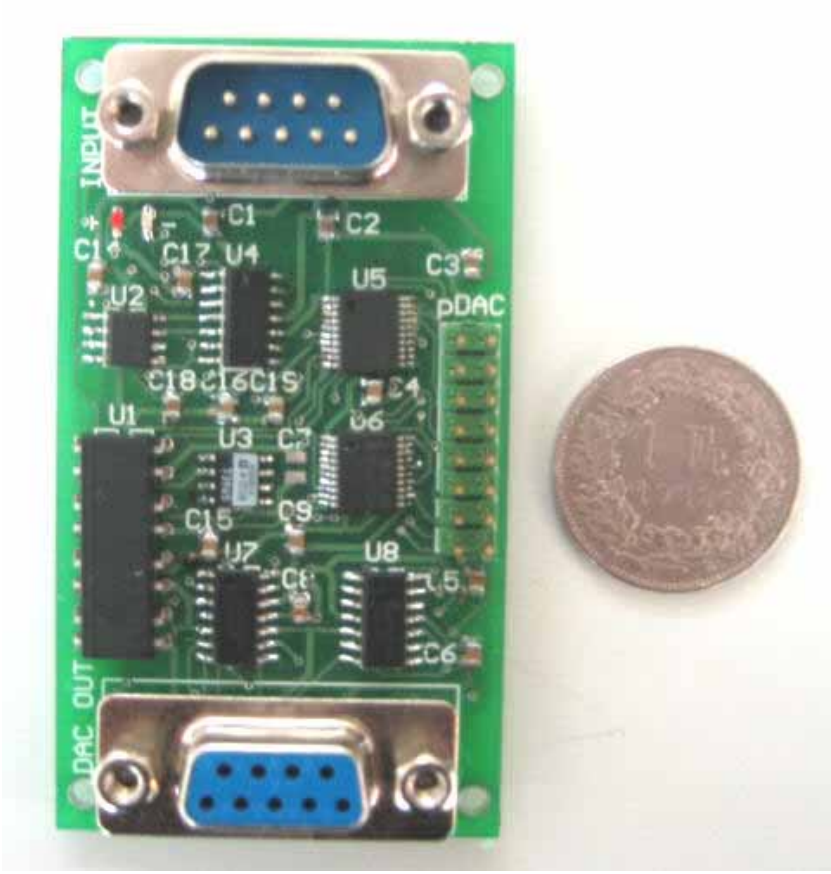


CAN Bus - PVSS

6 x CFD CANBERA 454

Faculty of Physics,
Warsaw University of Technology

CFD Control (CANBERA 454)



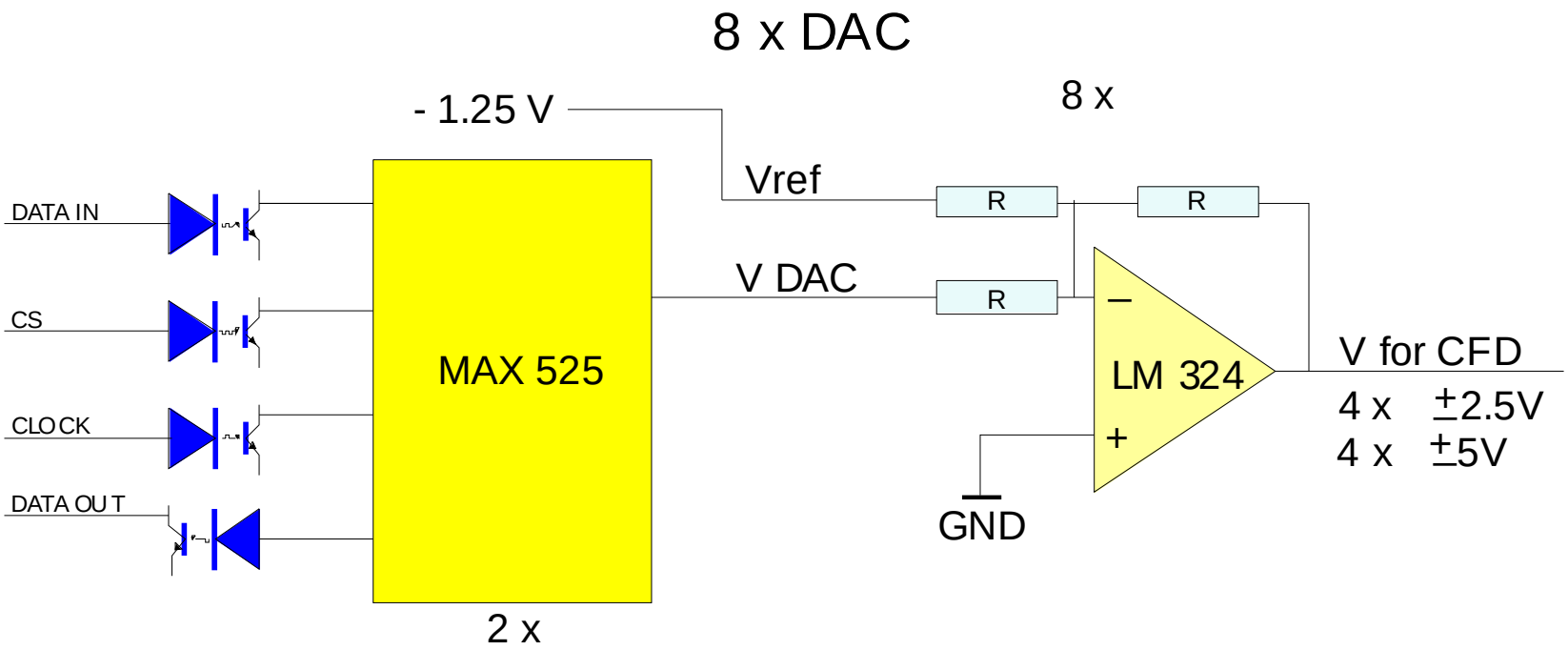
DAC Unit

DAC OUT
24 x +/- 2.5 V
24 x +/- 5V

1 mV
10 mA

Faculty of Physics,
Warsaw University of Technology

CFD Control (CANBERA 454)



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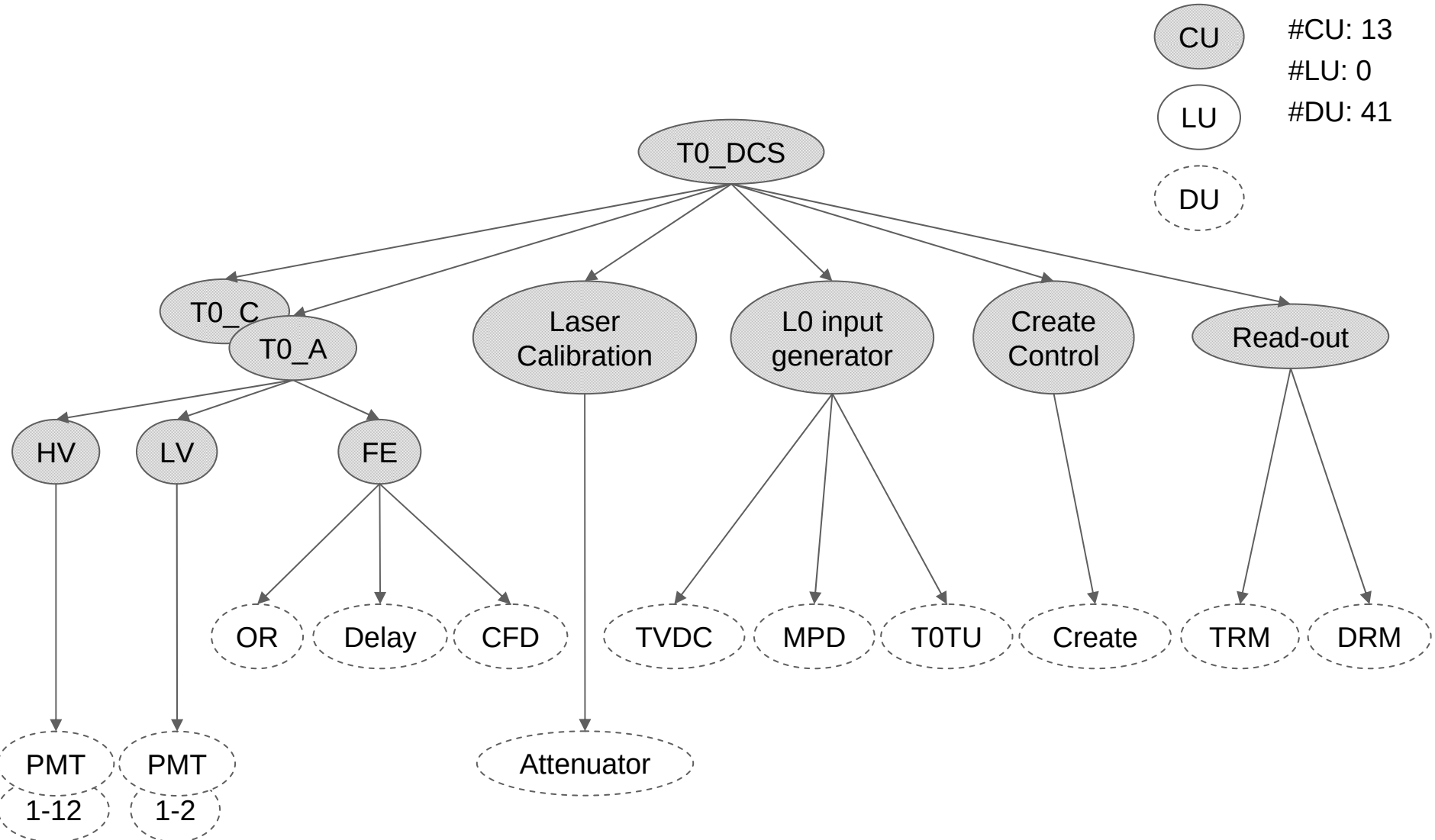
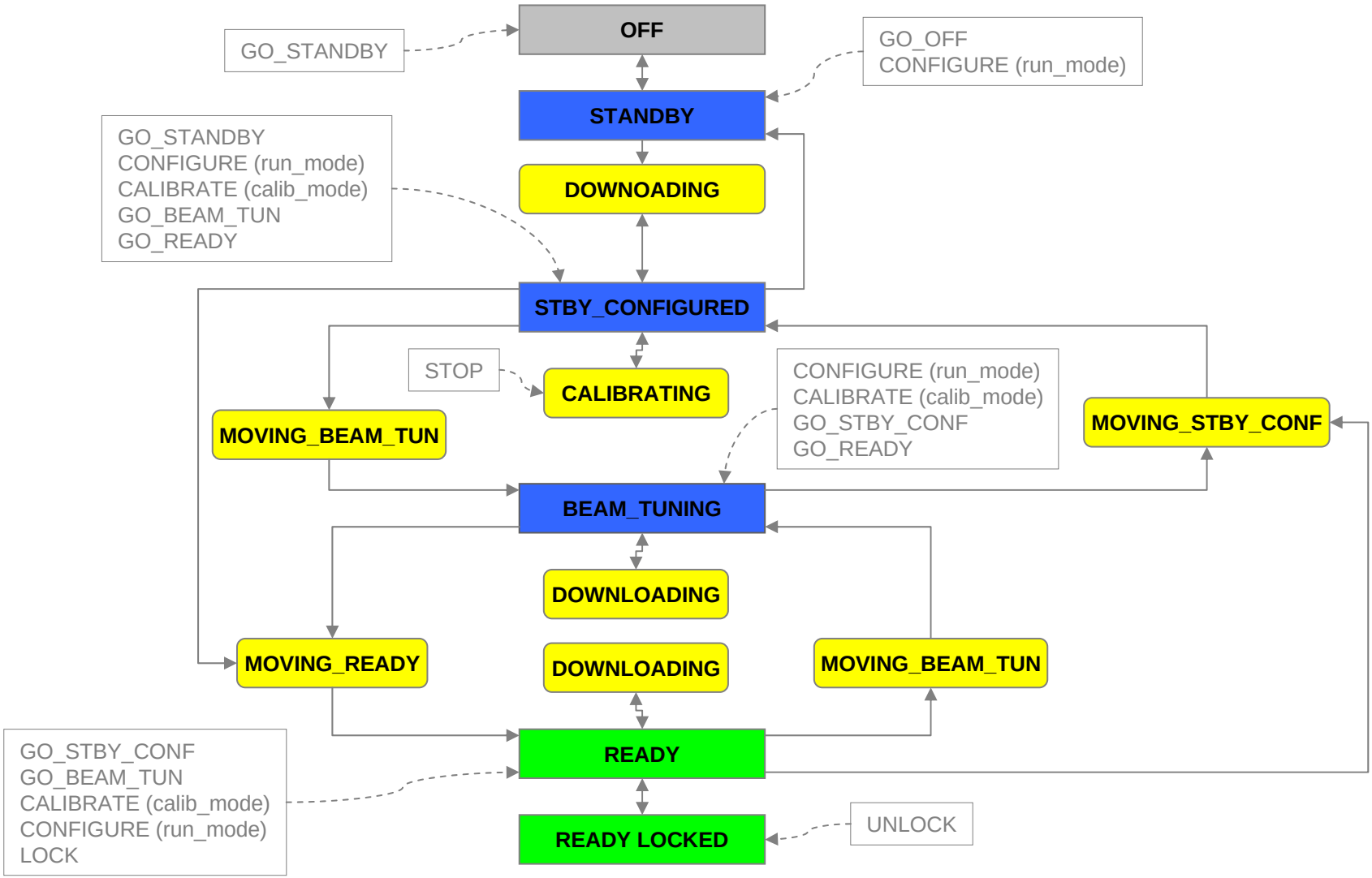
CFD Control (CANBERRA 454)

Faculty of Physics,
Warsaw University of Technology

T0 FSM Hierarchy



T0 DCS state diagram

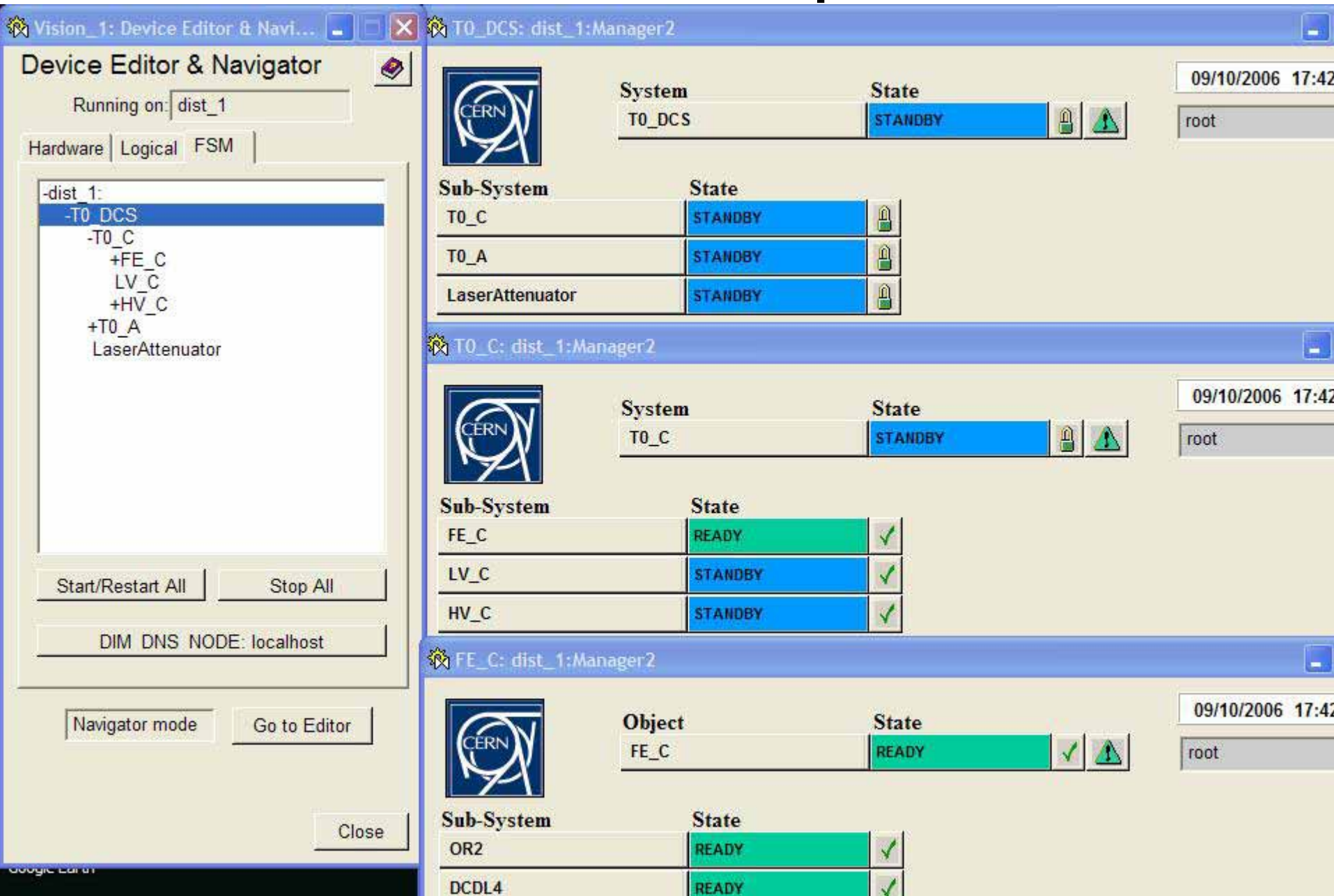


Software

For our test we use

- PVSS 3.1 (SP 2)
- fwInstallation 2.3.3
- Framework 2.3.7
- DIM version 9.8
- CAENVME controller drivers rev.2-4
- CAENHVOPCServer_2.12
- OPCServerConf_1.1.1

FSM example


Vision_1: Device Editor & Navi...
Device Editor & Navigator
Running on: dist_1
Hardware
Logical
FSM
-dist_1:
-T0_DCS
-T0_C
+FE_C
LV_C
+HV_C
+T0_A
LaserAttenuator
Start/Restart All
Stop All
DIM DNS NODE: localhost
Navigator mode
Go to Editor
Close
T0_DCS: dist_1:Manager2
System
State
T0_DCS
STANDBY
09/10/2006 17:42
root
Sub-System
State
T0_C
STANDBY
T0_A
STANDBY
LaserAttenuator
STANDBY
T0_C: dist_1:Manager2
System
State
T0_C
STANDBY
09/10/2006 17:42
root
Sub-System
State
FE_C
READY
LV_C
STANDBY
HV_C
STANDBY
FE_C: dist_1:Manager2
Object
State
FE_C
READY
09/10/2006 17:42
root
Sub-System
State
OR2
READY
DCDL4
READY

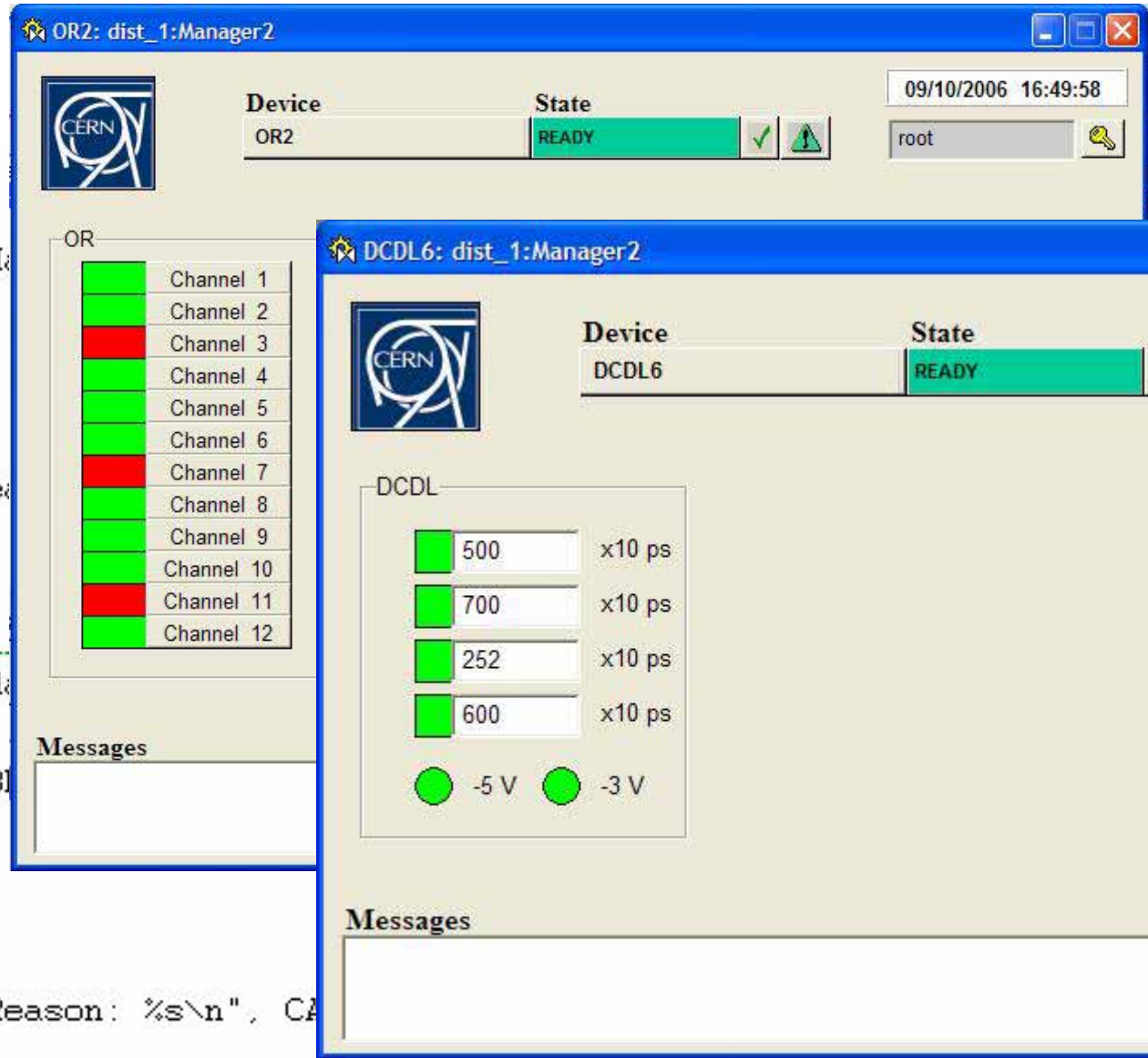
Description

To have a possibility manage Fast Electronics it was build Dim Server. It connect PVSS Dim Client with controller of VME create. So we can manage blocks of fast electronics.

Dim connect

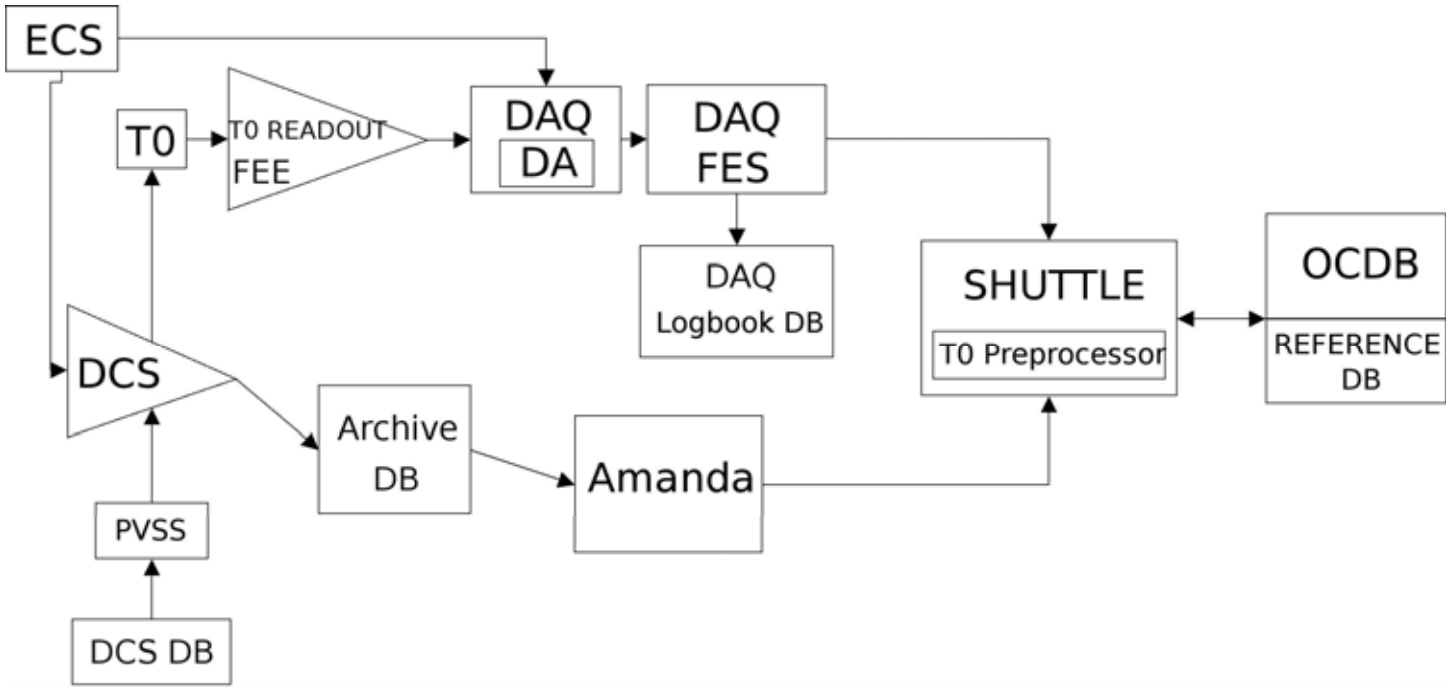
```
int VMEblock::ReadBlock(void)
{
    CVErrorCodes ans;
    ans = CAENVME_ReadCycle(BH
    if(!ans)
    {
        return 1;
    }
    else
    {
        printf("Can't read. Re
        return 0;
    }
}

//-----------------------------
int VMEblock::WriteBlock(int d
{
    CVErrorCodes ans;
    ans = CAENVME_WriteCycle(B
    if(!ans)
    {
        return 1;
    }
    else
    {
        printf("Can't write. Reason: %s\n", CA
        return 0;
```



T0 outlook

Calibration



- AliSTARTPreprocessor
- AliSTARTCalibData
- Use case (1 and 4 ?) to be confirmed

Use case 1: online creation in DAQ

- Calibration parameters are computed online in the DAQ LDC/GDC/Monitoring machines from physics or dedicated data
- Results are made available as ROOT files in the DAQ FES
- The path of these files together with the start and end of run timestamps is written in the DAQ Logbook
- At the end of the run additional processing may occur controlled by the ECS
- Upon notification by the ECS, the SHUTTLE queries the DAQ Logbook for file name and timestamps and fetches the appropriate parameter files
- It stores the files into the CERN storage and adds an entry (run validity and unique identifier of the files) into the AliEn FC

Preliminary

Parameter	Data format/size per channel	Data size (Total) Bytes OCDB	reference	Update freq	Source	Confirmed	Run type / Trigger type	# of required events	Processing level:	Results:	Accessible by offline	Calib. Procedure in AliRoot	use case #
Total delay/ channel (laser)	Array (Float[3])	2,00E+02	no	Run	DAQ	yes	laser	1000	sub-event	OCDB	Yes	in progress	1
Total delay/channel (beam)	Array (Float[3])	2,00E+02	no	Run	DAQ	yes	Phys.run	1000 pp	sub-event	OCDB	Yes	in progress	1
PMT amplitude (laser)	Array (Float[3])	2,00E+02	no	Run	DAQ	yes	laser	1000	sub-event	OCDB	Yes	in progress	1
PMT amplitude (beam)	Array (Float[3])	2,00E+02	no	Run	DAQ	yes	Phys.run	1000 pp	sub-event	OCDB	Yes	in progress	1
time walk with LED	TGraph(~60double)	6,00E+03	no	Run	DAQ	yes	calibration/laser	5000	sub-event	OCDB	Yes	in progress	1
time walk with QTC	TGraph(~60double)	6,00E+03	no	Run	DAQ	yes	calibration/laser	5000	sub-event	OCDB	yes	in progress	1