



TEC modules tests at Louvain la Neuve (Belgium)

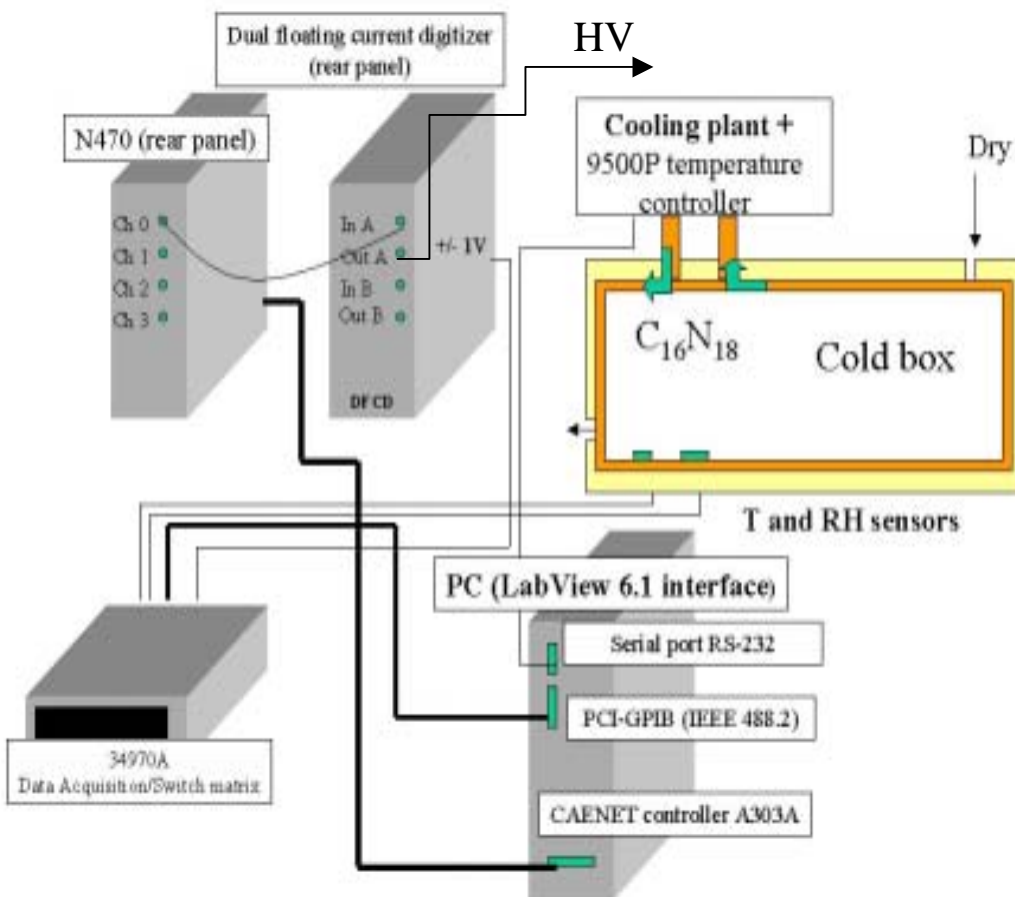
03.12.2002

CERN, CMS Week

CMS Modules Group: L.Bonnet, B.Callagay, C. Delaere,
G.Gregoire, V.Lemaitre, T.Keutgen, O.Militaru, K.Piotrzkowski,
O.van der Aa



- **Hardware configuration..**
cold box, cooling plant, instruments...
- **Software development..**
- **Preliminary results..**
- **Conclusions..**



- CAEN N470 HV (connected to the PC via CAENET A303A card)

- Dual Floating Current Digitizer, (double bipolar electrometer, NIM format); sensitivity varies in the range 10 nA to 100 microA with a 0.001 fs resolution); integration time for the current digitization is ~ 10 ms.

Cold box:

- T and RH sensors Honeywell HI H 3602C; accuracy around 0.5°C@25°C (connected to Agilent 34970A)
- 9500P CAL CONTROLS temperature controller.

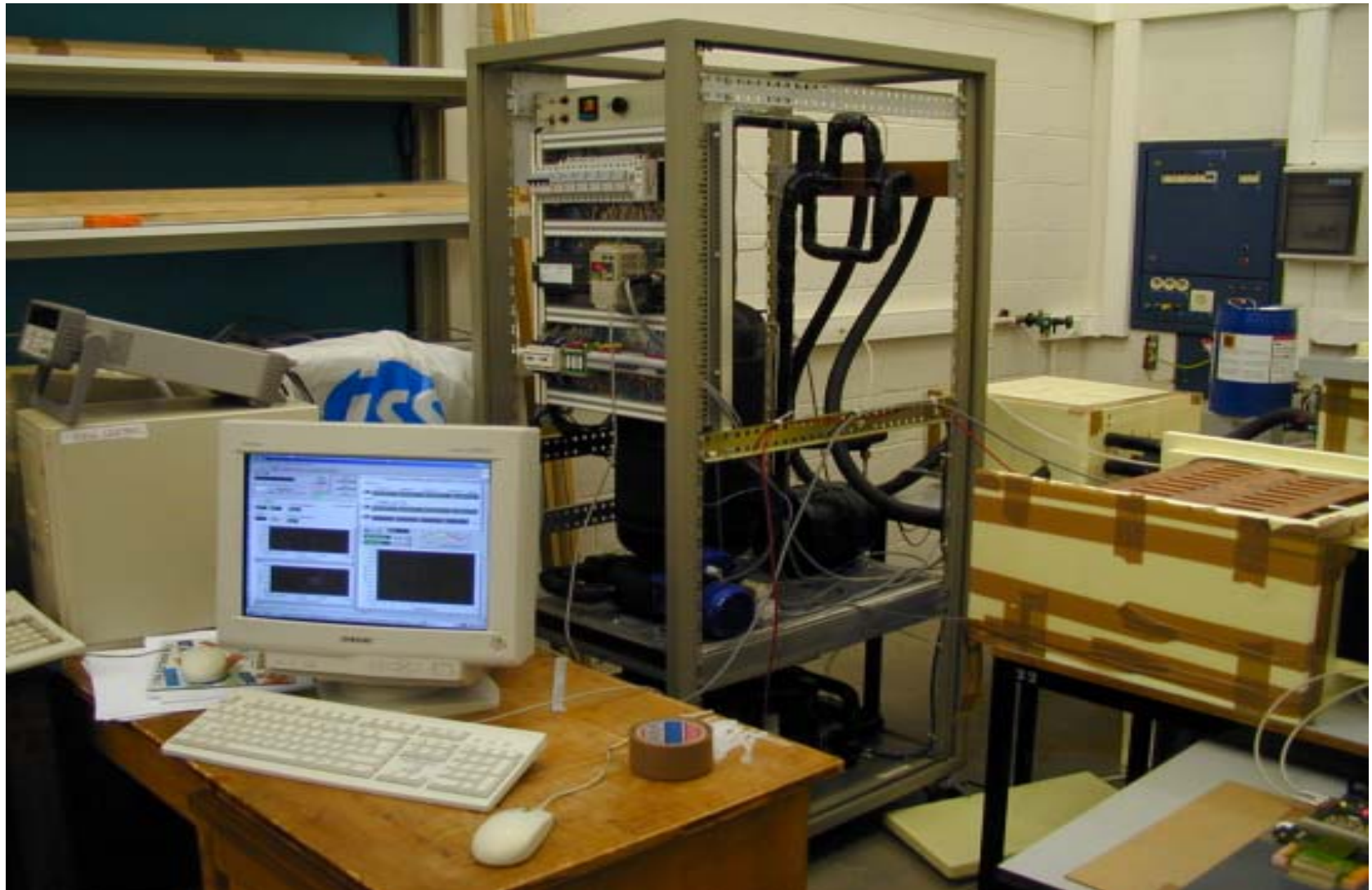


Hardware (cold box)





Hardware (cooling plant)



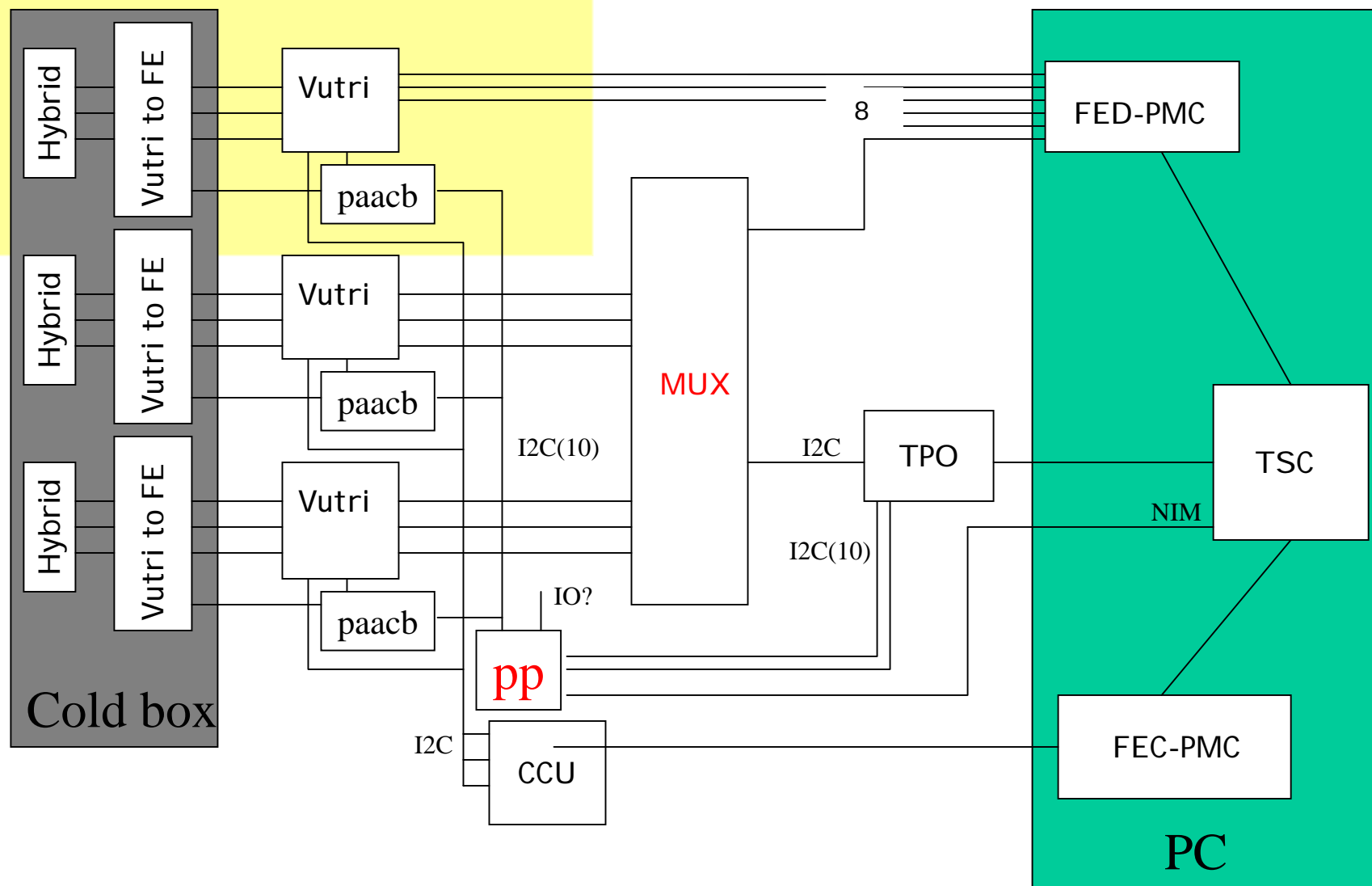
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Otilia Militaru, CMS Week, CERN

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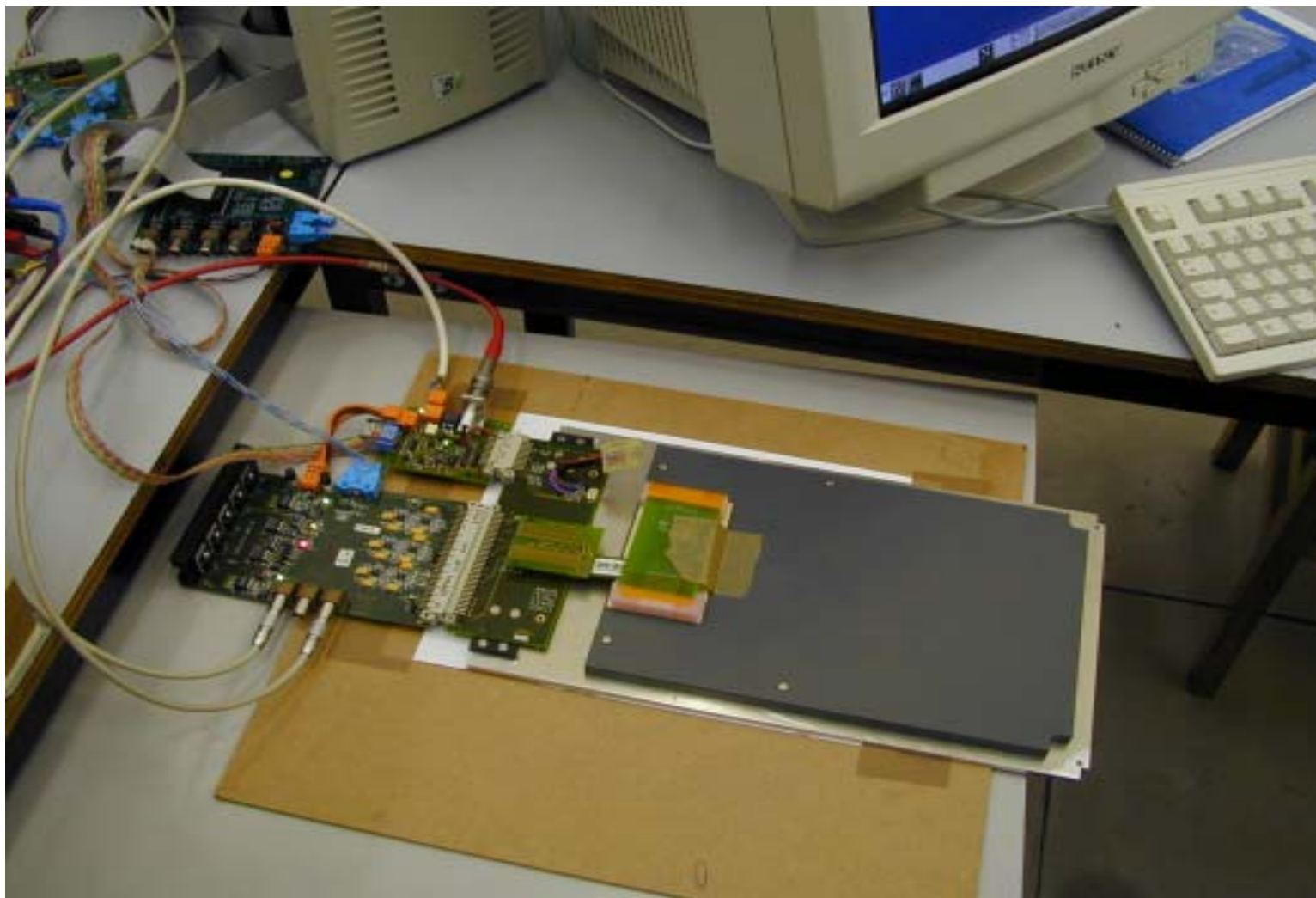


DAQ Hardware for Module Test



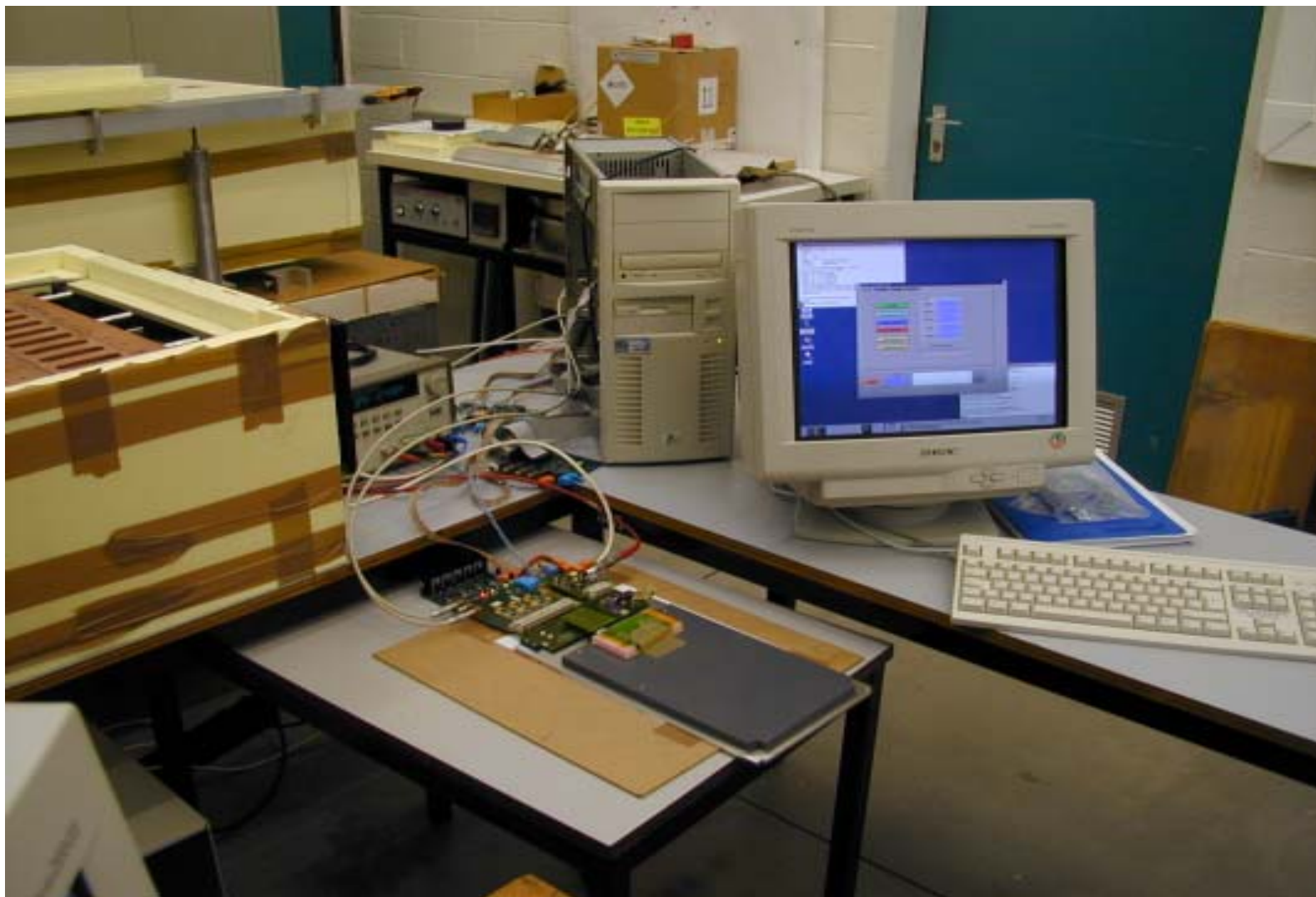


Hardware (modules test)





Hardware (modules test)





Software SC and DAQ



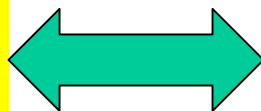
- SLOW CONTROL:**

Labview 6.1 interface: (slave)

- control and monitor the T of cold box;
- control and monitor the 470N HV and DFCD;



TCP-IP
protocol

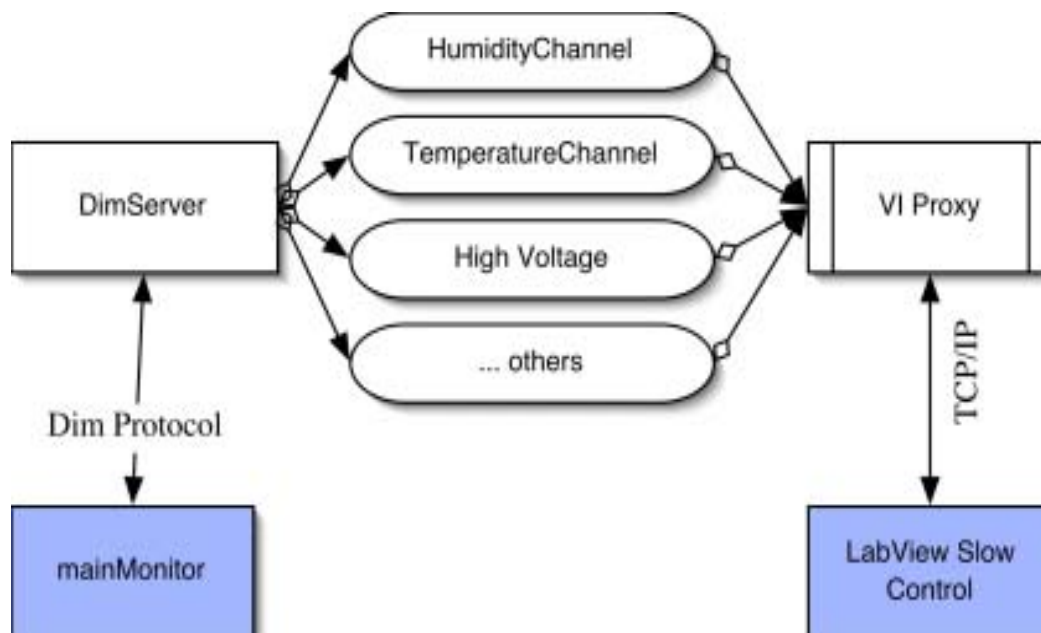


- DAQ:**

Antwerpen like system: (master)



W. Beaumont, C.Delaere, O.van der Aa, T.Keutgen



In the **mainMonitor**, probes and controls are declared as dim channels. A small **dim server** handles that channels, and forwards requests via tcp/ip. The **LabView** code has a tcp/ip server running and reacts to requests.



Advantages are:

- slow control runs on another PC. If DAQ crashes (this WILL happen),
slow control (including HV...) is not affected
- New level of abstraction: no change at all to the DAQ software if a new model of power supply is used.



Installation:

- Easy to install / compile if the environment is « standard ».
- Some tricky environment variables, but well documented.
- Become quite difficult to do if the config is not exactly the one foreseen
(xerces version, linux distribution, Lyon software's installation, ...).

Problems arise when running:

- XML file difficult to adapt without external help.
- Still some (not relevant yet) problems in the display
(like refresh of slow control values and time of reaction).
- The soft crashes when exiting (last version).
- Strange behaviors of ROOT files (crash when drawing several histograms).

This is not plug-and-play, but Wim is always willing to help when it is needed and it is really useful.

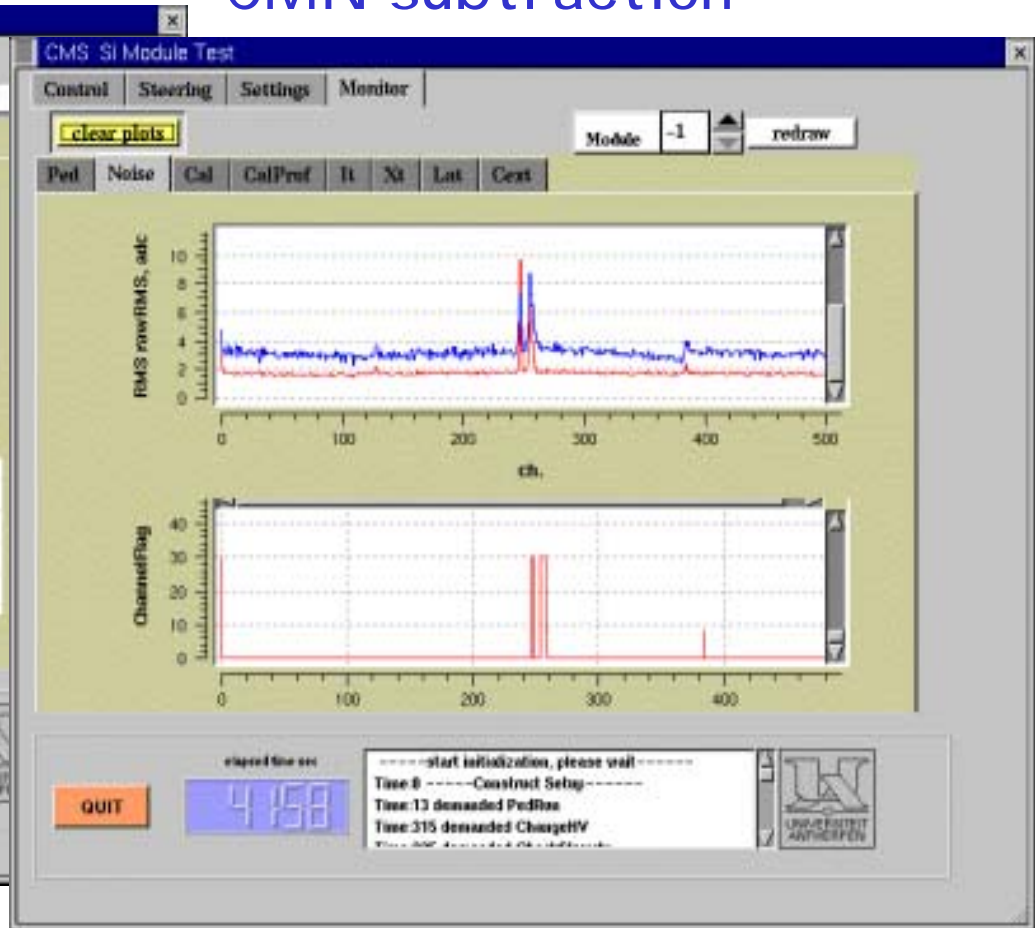
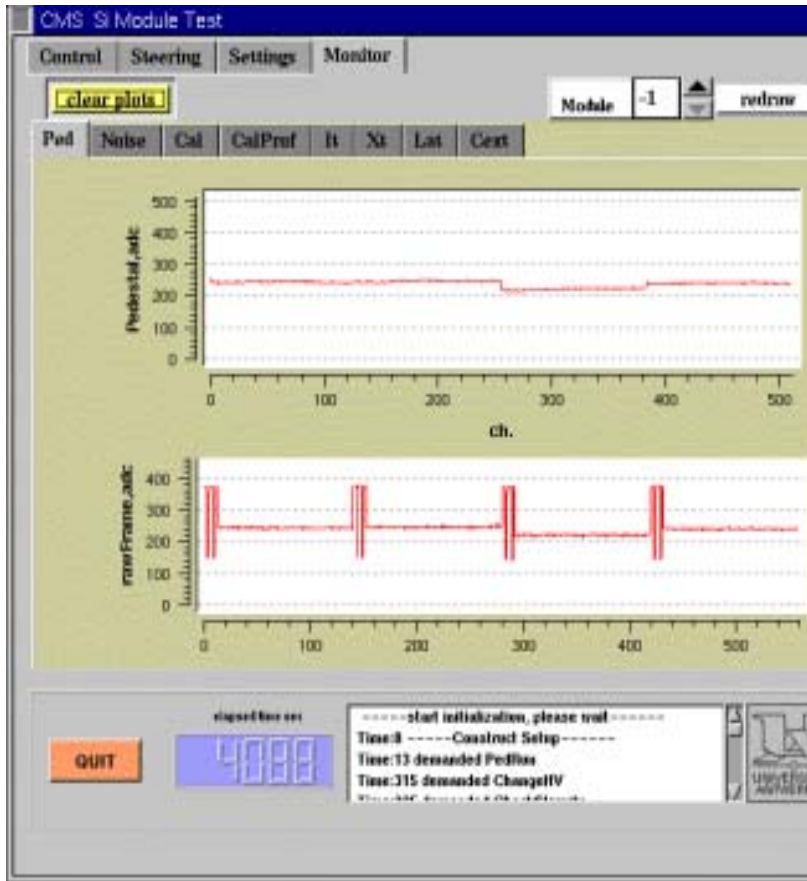


Preliminary results



Pedestal

Noise before and after
CMN subtraction

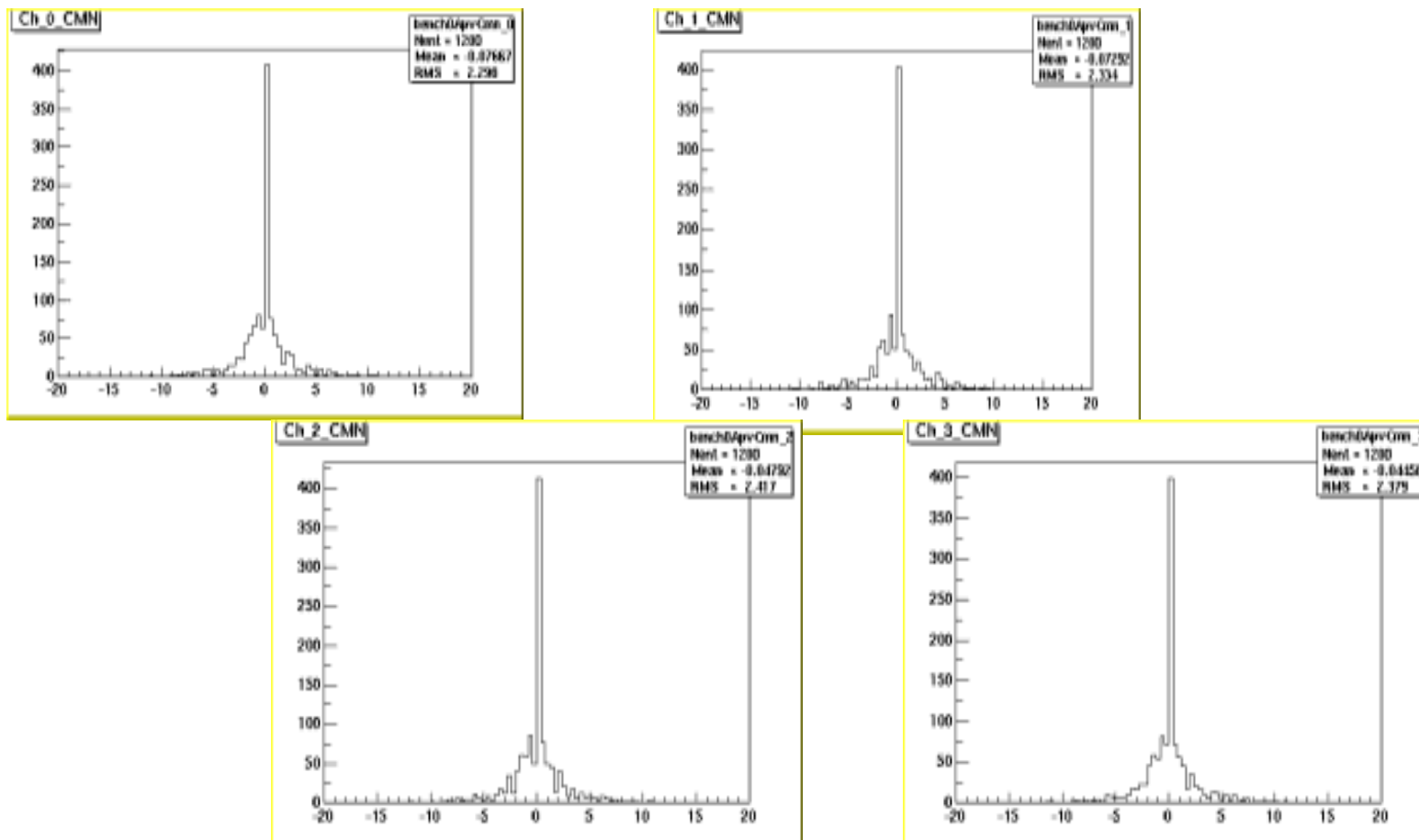




Preliminary results



Distribution of the CMN for all 4 APVs



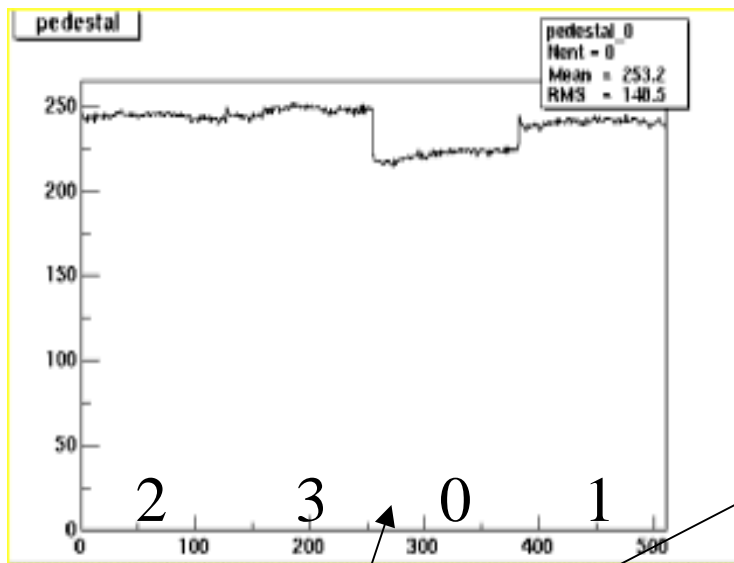


Preliminary results

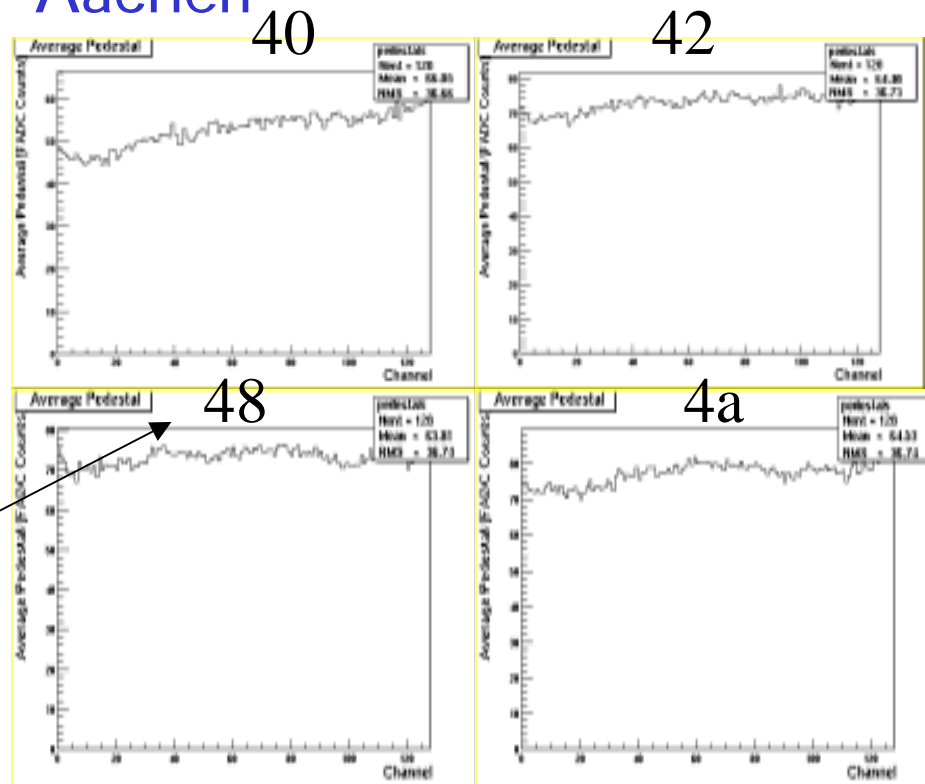


..comparison with Aachen tests

Pedestal: LLN



Aachen





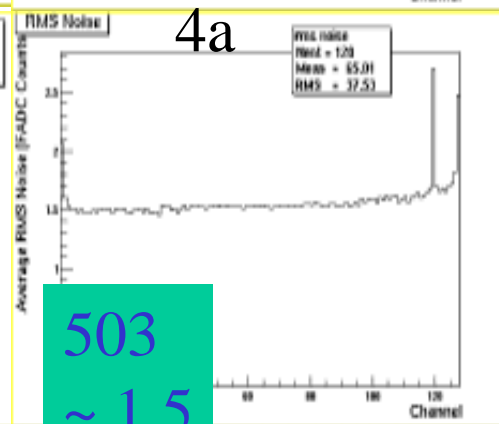
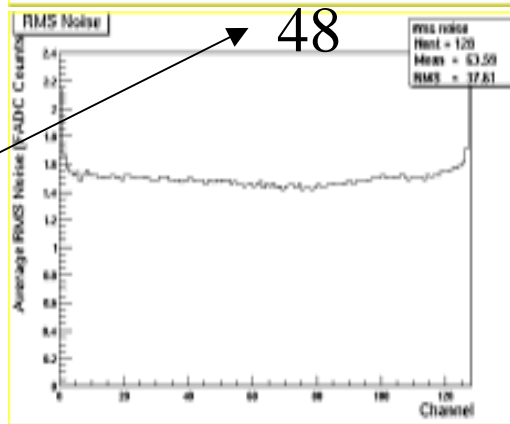
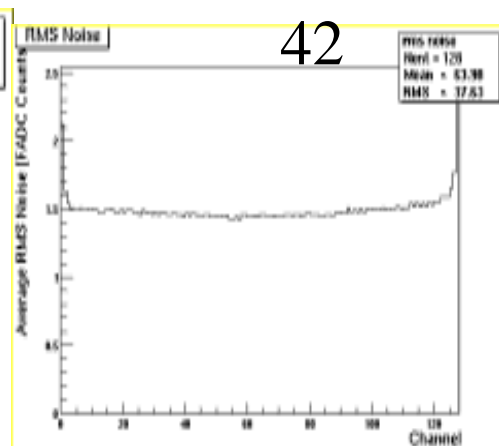
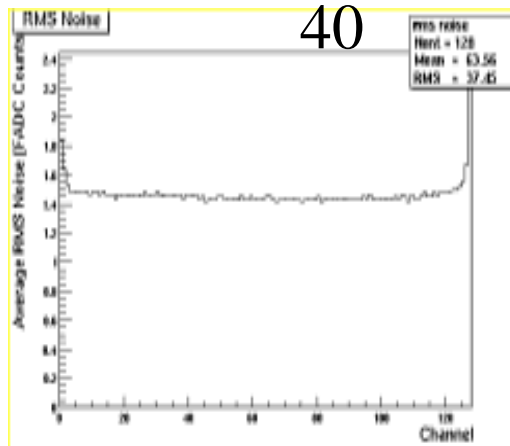
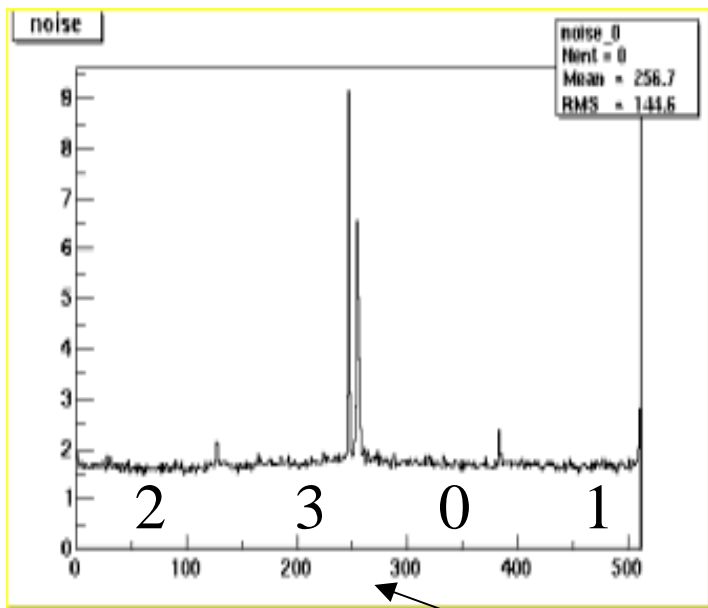
Preliminary results



..comparison with Aachen tests

Noise: LLN

Aachen



246, 254, 255
~ 1.5

APVs

503
~ 1.5



Preliminary results

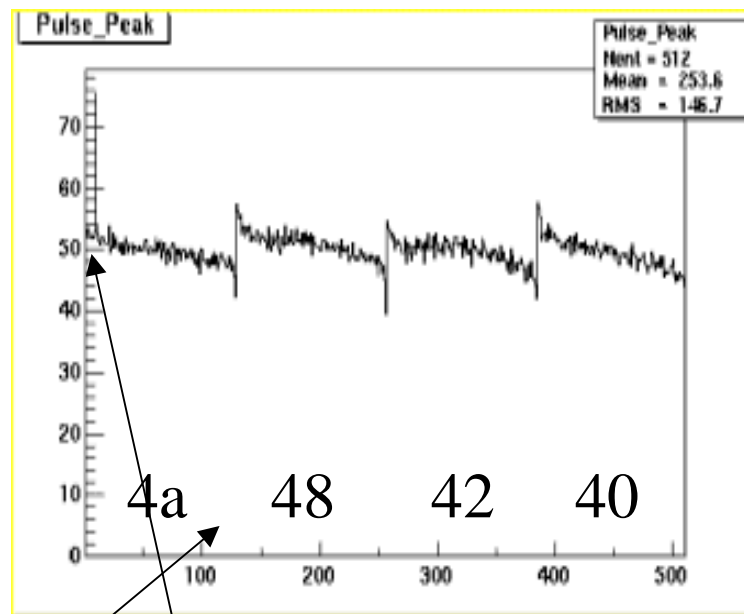
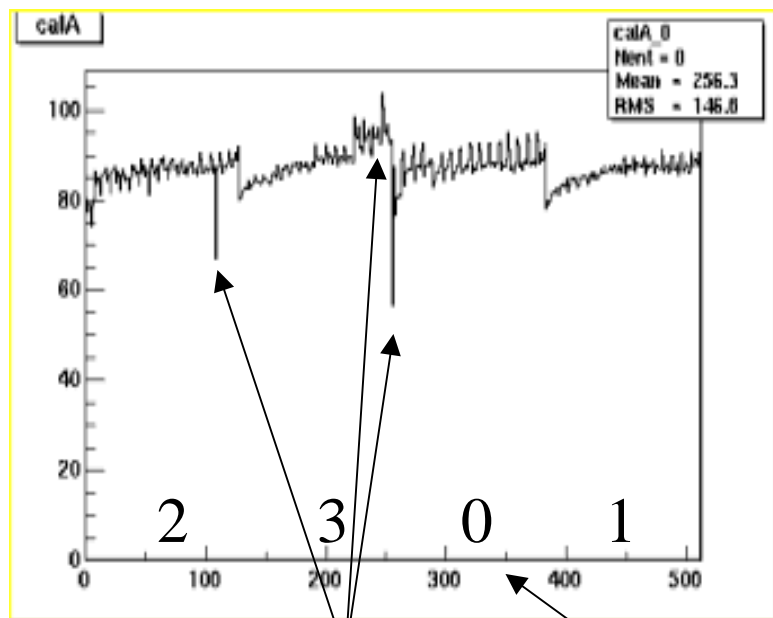


..comparison with Aachen tests

Pulse Peak for all 4 APVs

LLN

Aachen



108, 246, 254

APVs

9

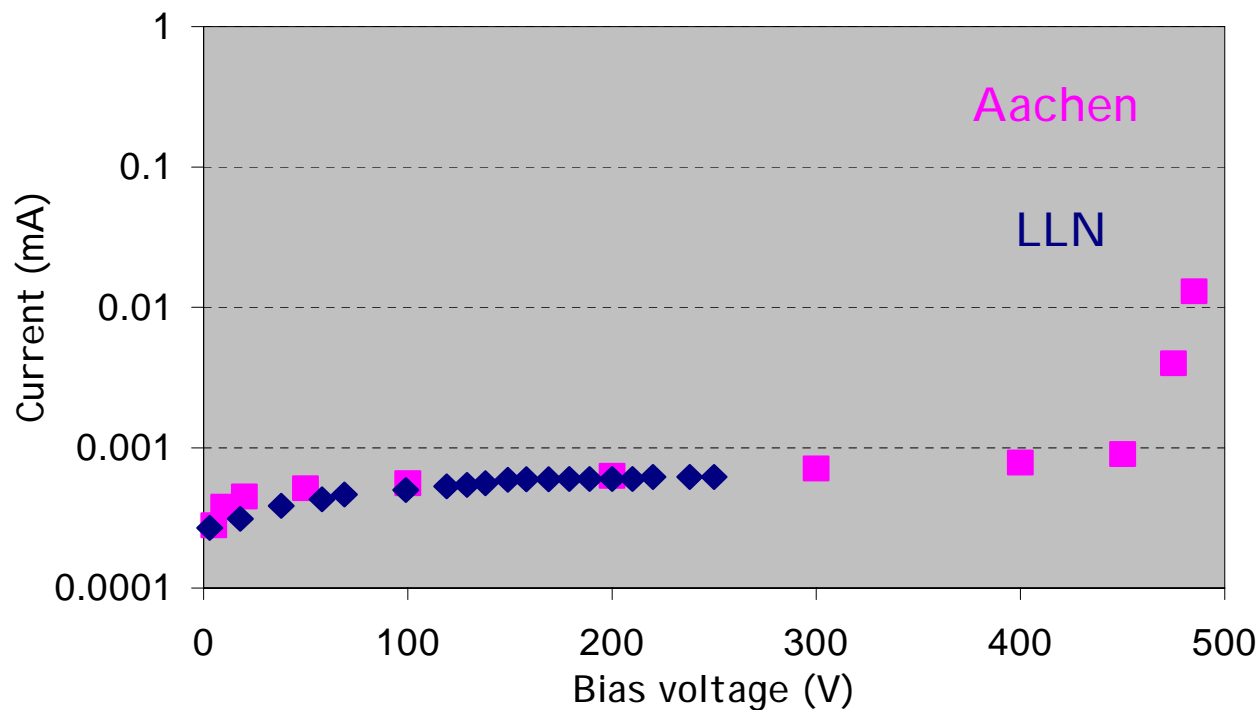


Preliminary results



..comparison with Aachen tests

the current variation with the bias voltage





Observations..



- Software installation was a difficult task;
- The output .root files we suspect that have a problem, can be visualized only one plot at a time, root program crash..;



- Lyon like system is operational in Louvain-la-Neuve;
- trace the Module 48 sensors, get their characteristics to compare with our data;
- start to implement the Modules local database;
- we need more TEC modules to gain experience and start multi modules tests!!!