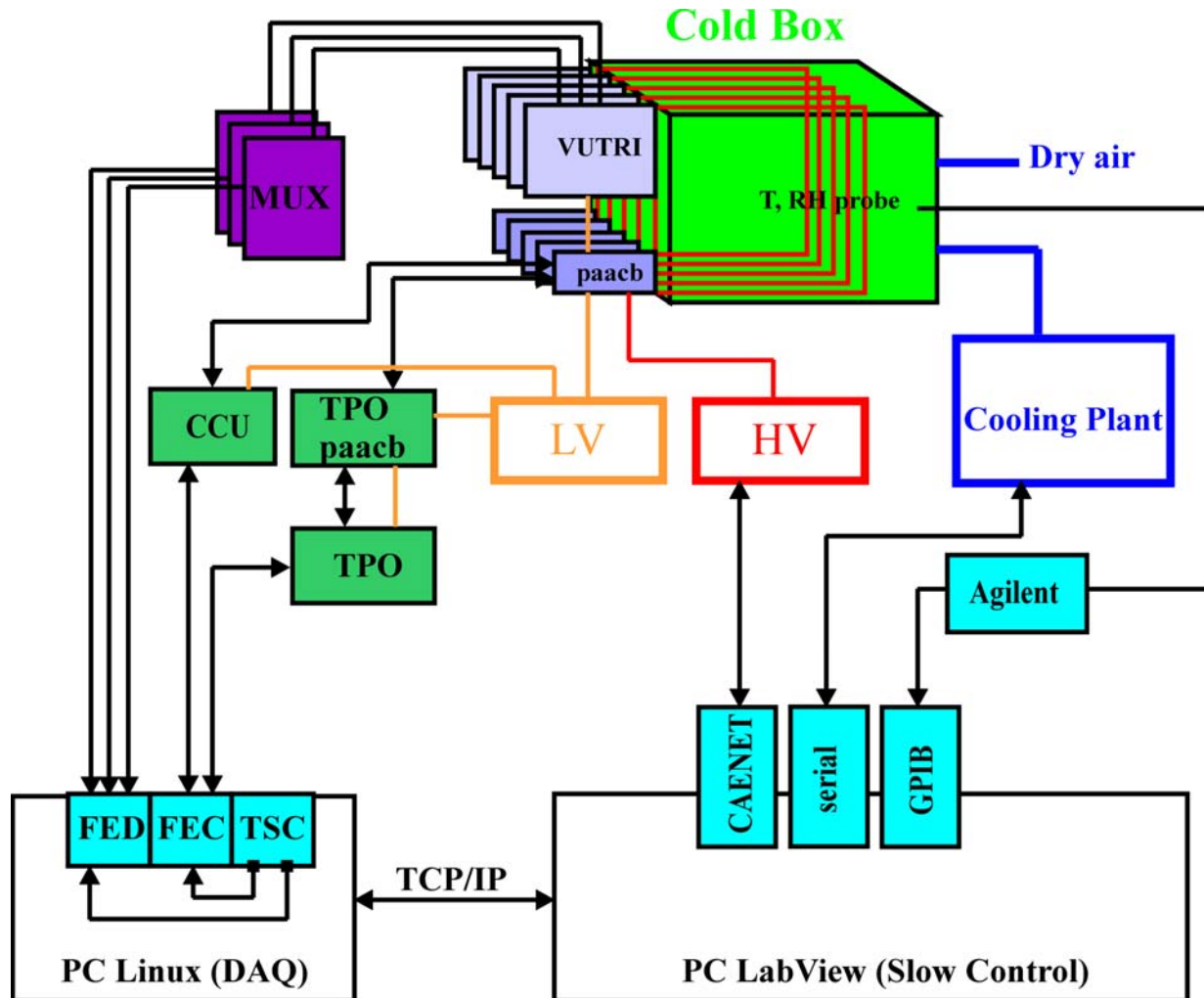


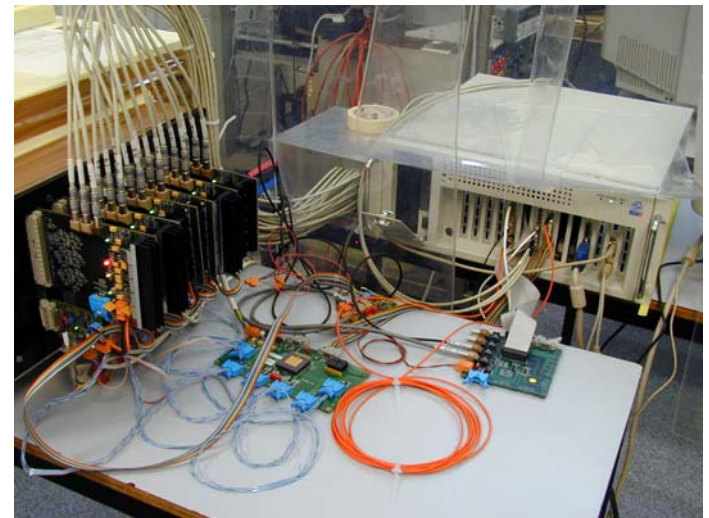
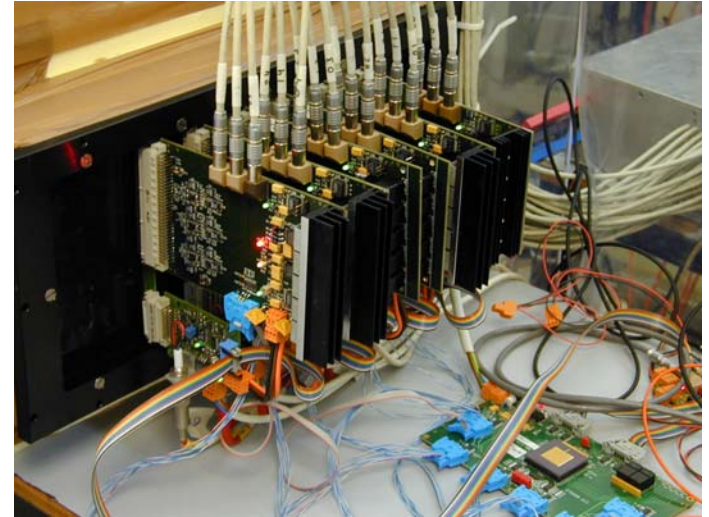
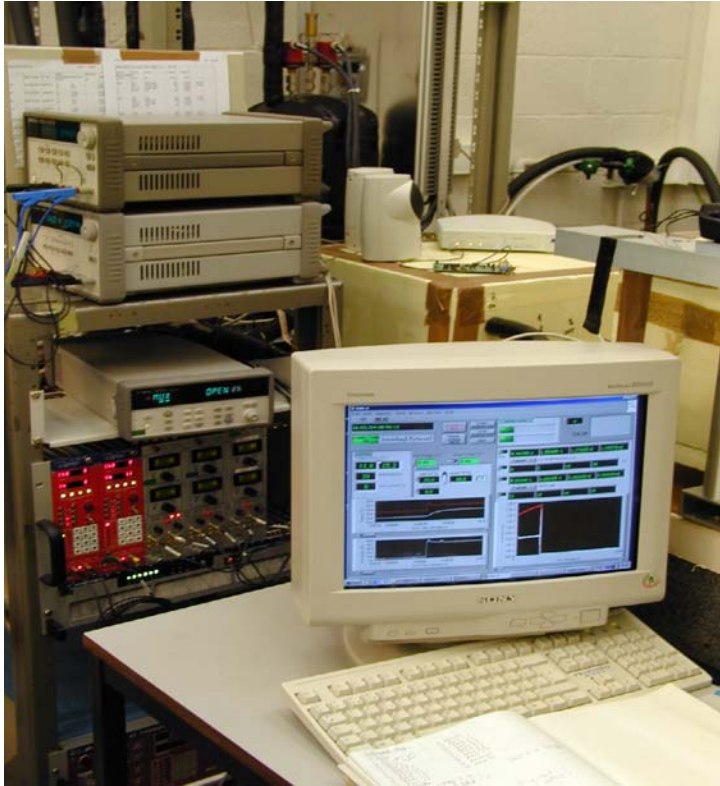


# Xcalibration in Louvain



- 6 modules tested including X-calibration (502, 8, 2, 26, 641, 3)
  - OK with 6 modules
- X-calibration (~ 10 hours scenario):
  - Comparison with Antwerpen:
- Setup:
  - Last version for Lyon DAQ, Lt\_1\_22 and Labview 6.1
  - 2 HV power supplies (Caen N470)
  - 1 CCU for 6 modules
  - 1 MUX
  - 1 TPO
  - 1 TPO-paacb board (BPpulse: Not used here)
  - 6 VUTRI + 6 paacb







# Status of Xcalibration



## Problems testing 6 modules in the coldbox:

- Unstable MUX just after power on (OK after waiting ~1 hour)
- Set HV:
  - SlowControl (Labview) had to be modified using 2 HV power supplies (Caen N470).
  - 2 sec delay added in the loop of ChangeHV (Lt\_1\_22: TestSteering)
  - For 0 Volt: we switch off the HV board
- Unstability of some electrometers for low current measurement (at low T)
  - 1 electrometer had to be replaced
  - The current measurement range had to be modified by hand during the scenario
- We were not able to reach  $-20^{\circ}$  in the cold box with 6 modules
  - We had to decrease the flow rate of the dry air leading to a higher RH in the coldbox.



# Longterm Scenario



ChangeHV 400      Antwerp (~10 hours)

ChangeCool 20  
 PedRun (every 80 sec)  
 TempReached  
 PedRun  
 CalProfRun  
 CalRun (4 APV modes)  
 LatRun  
 IVRun  
 SaveRec 0 MODULLTFIRST

ChangeCool -20

PedRun (every 80 sec)  
 TempReached  
 PedRun  
 CalProfRun  
 CalRun (4 APV modes)  
 LatRun  
 IVRun  
 SaveRec 2 MODULLTCOLD

ChangeCool 20

PedRun (every 80 sec)  
 TempReached  
 PedRun  
 CalProfRun (4 APV modes)  
 IVRun  
 SaveRec 3 MODULLTLAST

ChangeHV 400      Louvain (~10 hours)

ChangeCool 20 (set at start)  
 PedRun  
 CalProfRun (4 APV modes)  
 CalRun  
 LatRun  
 ChangeHV 10  
 IVRun  
 ChangeHV 400  
 SaveRec 0 MODULLTFIRST

ChangeCool -20

Pedrun (every 200 sec during 3 hours)  
 PedRun  
 CalProfRun (4 APV modes)  
 CalRun  
 LatRun  
 ChangeHV 10  
 IVRun  
 ChangeHV 400  
 SaveRec 2 MODULLTCOLD

ChangeCool 20 (wait for 1 hour)

PedRun  
 CalProfRun (4 APV modes)  
 ChangeHV 10  
 IVRun  
 SaveRec 3 MODULLTLAST

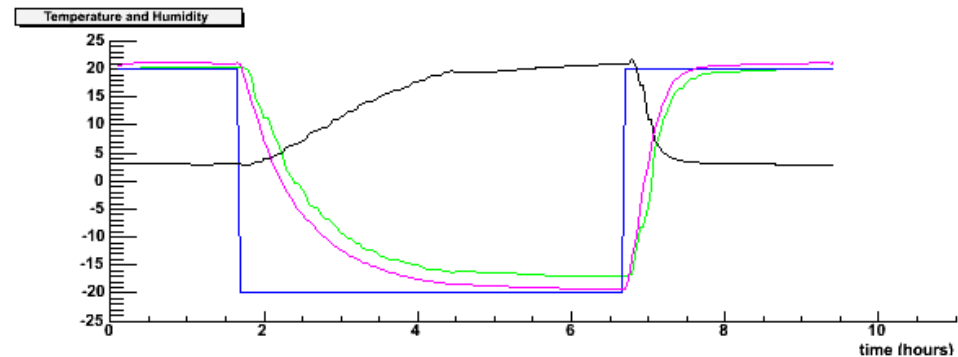
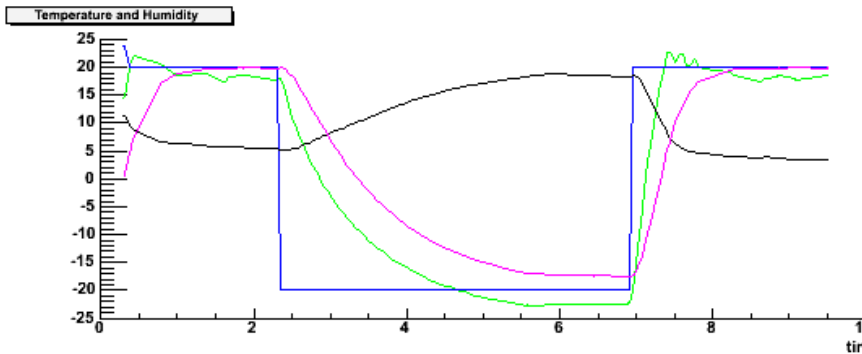
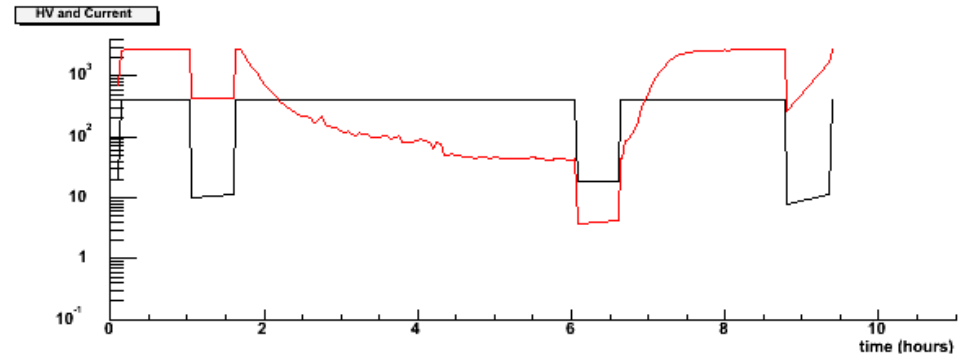
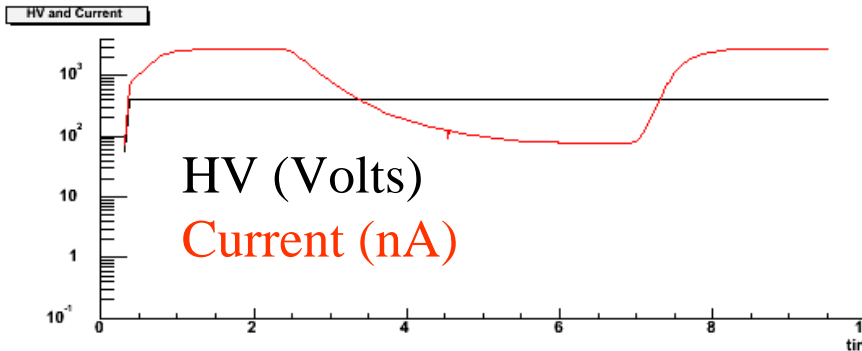


# Longterm Scenario



## Antwerpen

## LLN



Relative Humidity (%)

Temperature Set  
Temperature Box  
Temperature Sen2



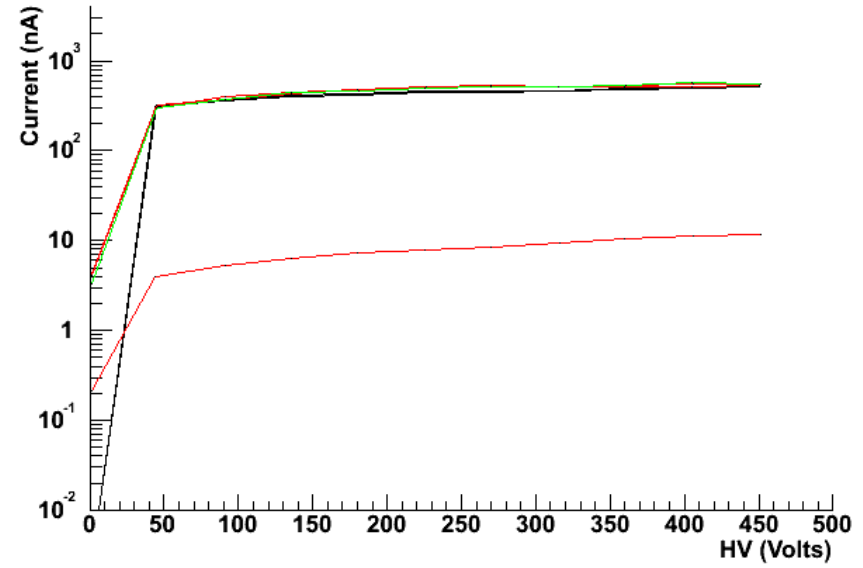
# IV run



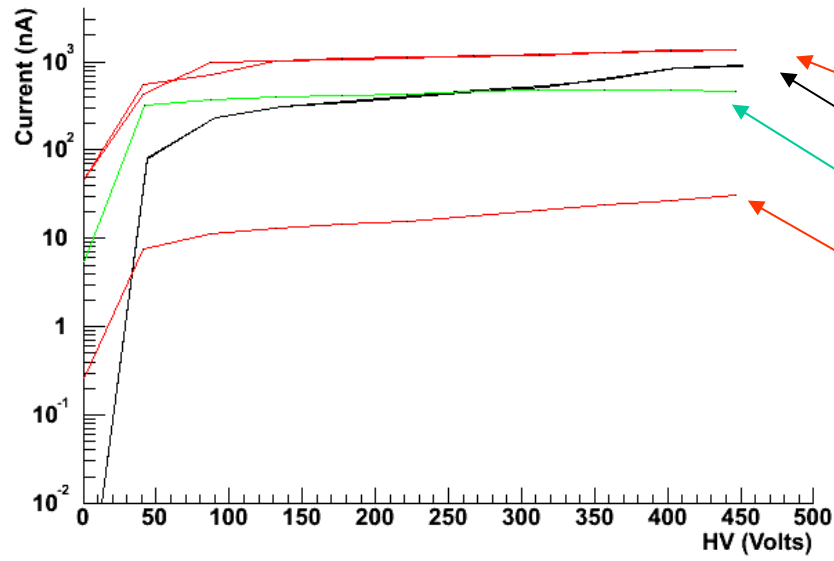
Good agreement  
(8, 26, 641, 3)

Not good agreement (2)

30211630200026

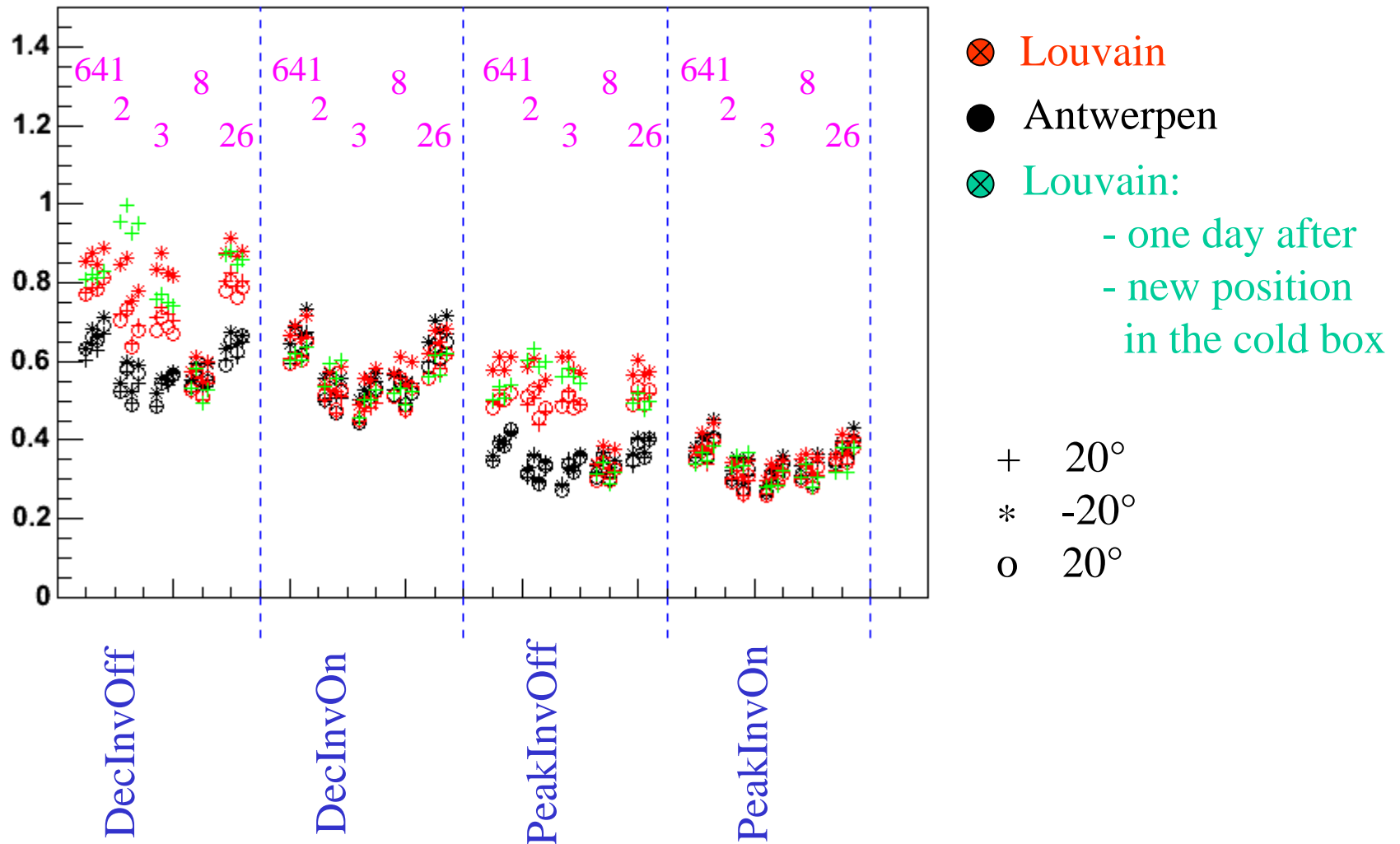


30200020015002



- 2 IV at 20° (Louvain)
- 2 IV at 20° (Antwerpen)
- 1 IV at 20° one day after (Louvain)
- 1 IV at -20° (Louvain)

## CMN:





# Module 8: Antwerpen - Louvain



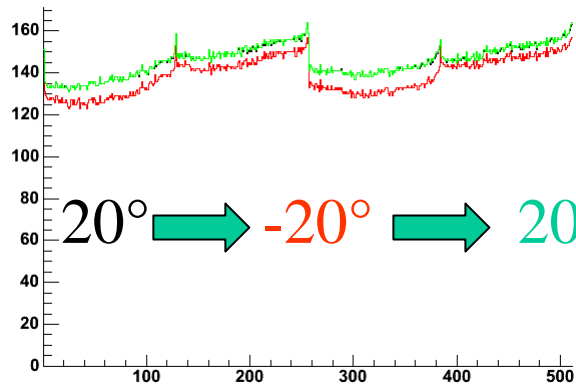
Pedestal: General good agreement for all modes  
Noise: ok only for Module 8

Antwerpen

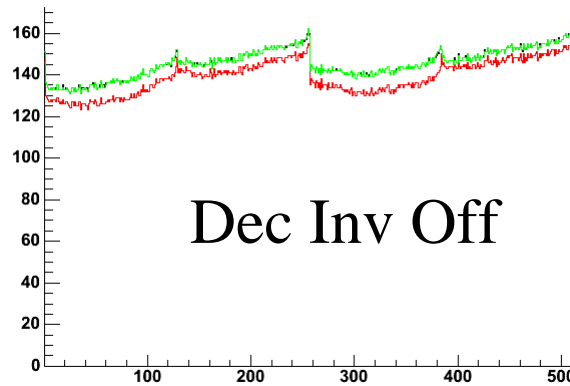
LLN

Aachen (ARC)

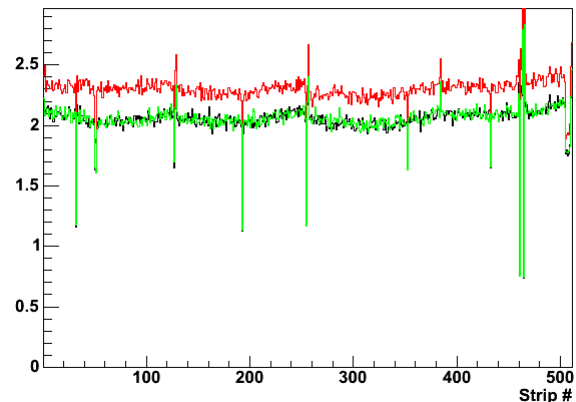
pedestal



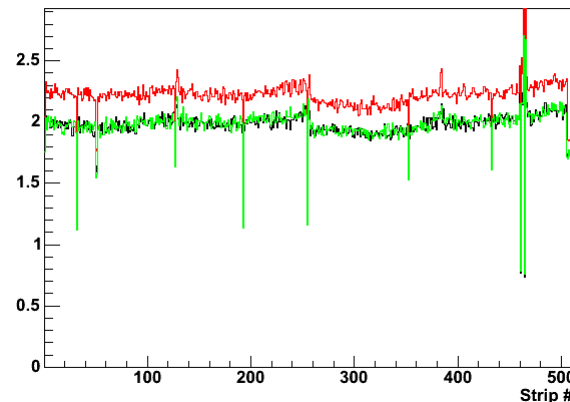
pedestal



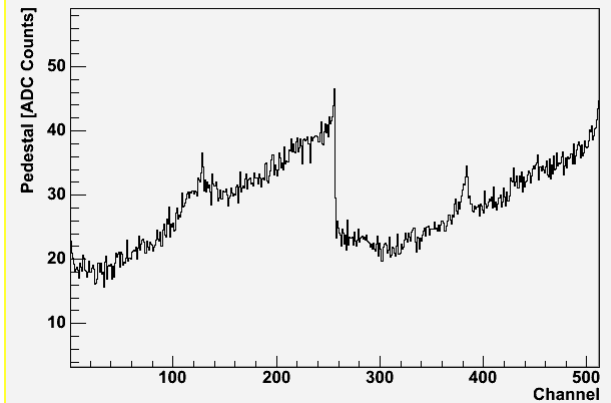
noise



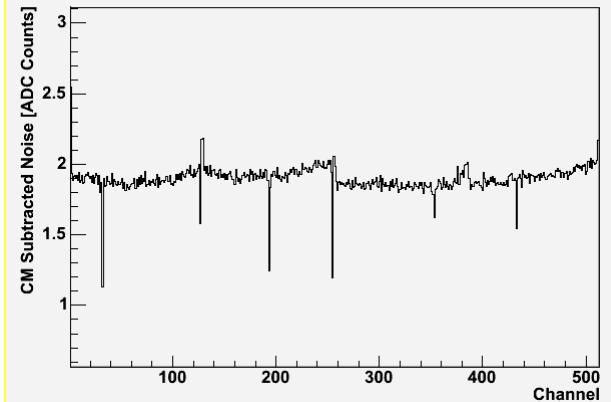
noise



Pedestal vs. Channel



CM Subtracted Noise vs. Channel

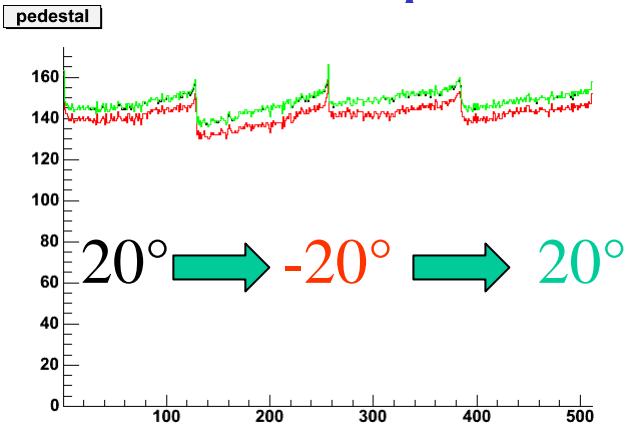




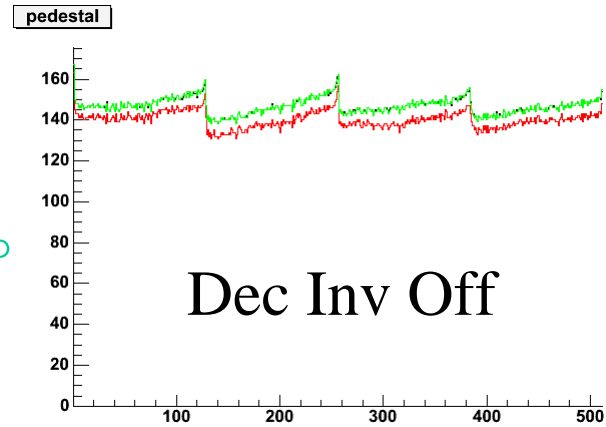
# Module 2: Antwerpen - Louvain



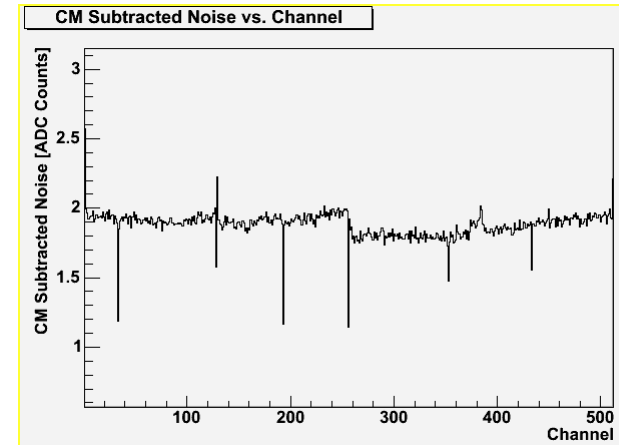
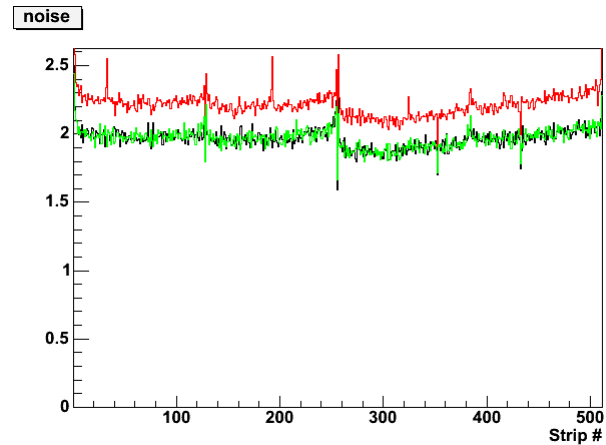
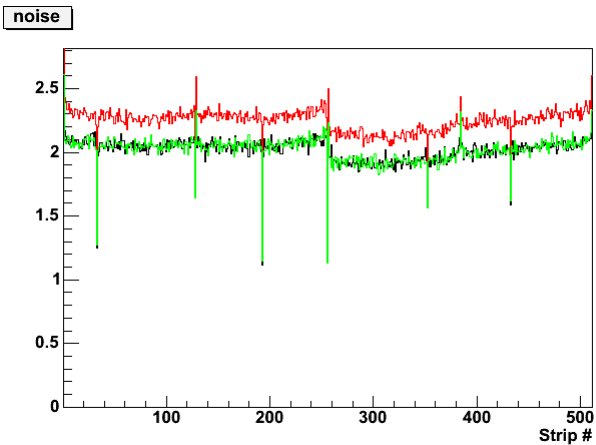
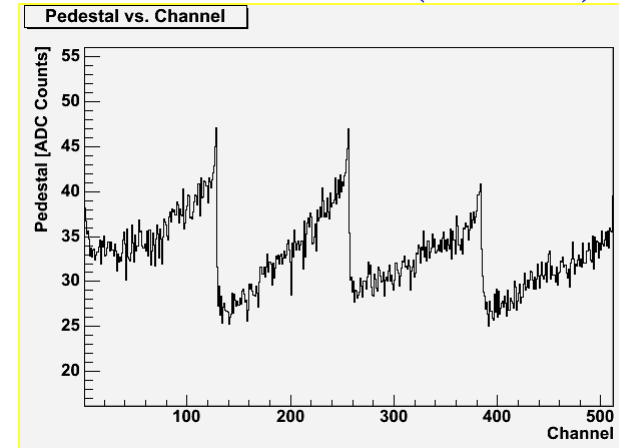
## Antwerpen



## LLN



## Aachen (ARC)



!!Grounding connection of the VUTRI adapter board!!



# Module 26: Antwerpen - Louvain

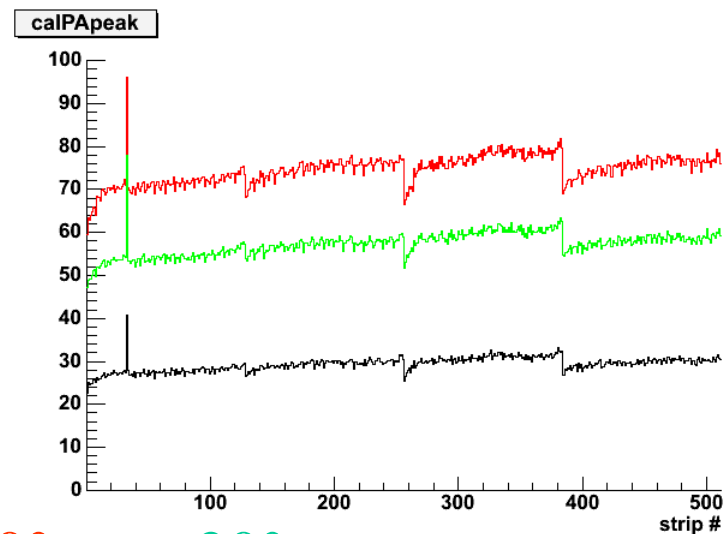
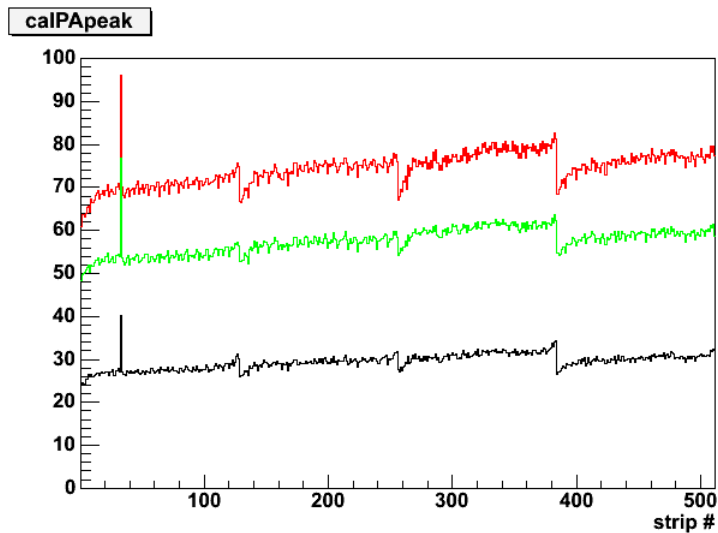


CalProf: General good agreement for all modes  
but no reproducibility for measurements at  $20^\circ$

Dec Inv Off

Antwerpen

LLN

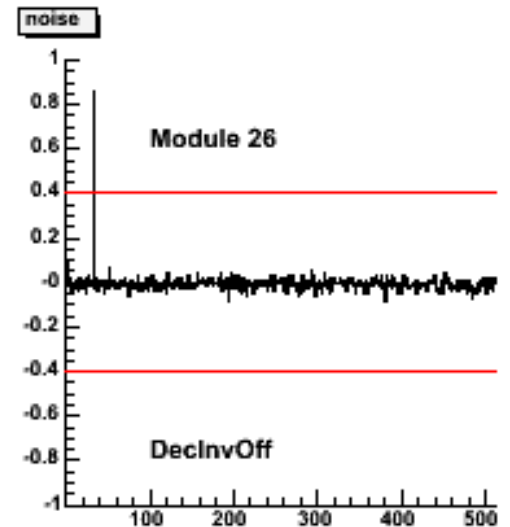
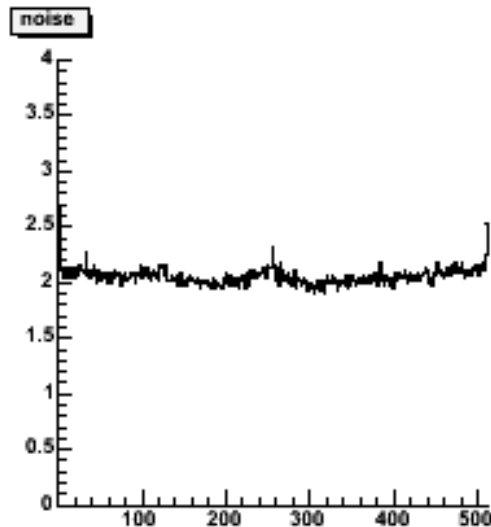
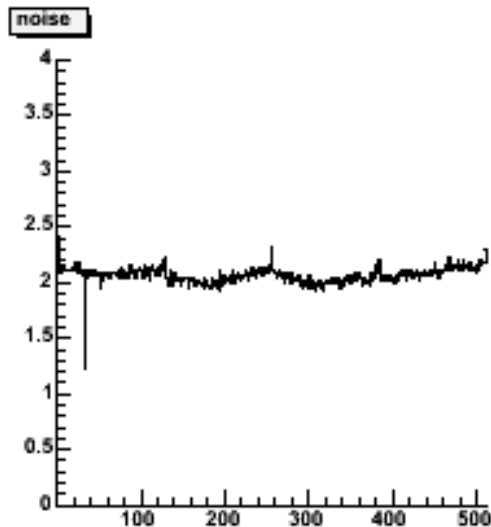
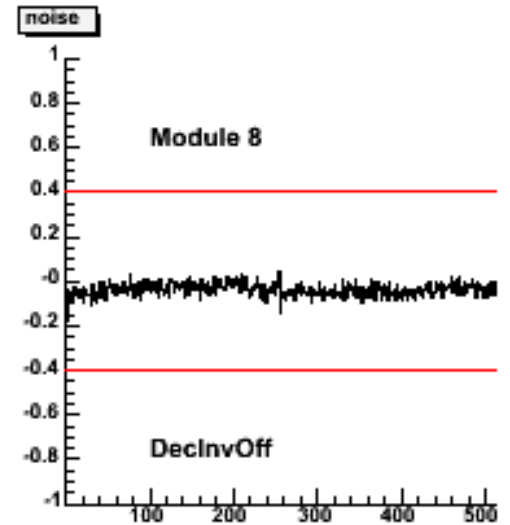
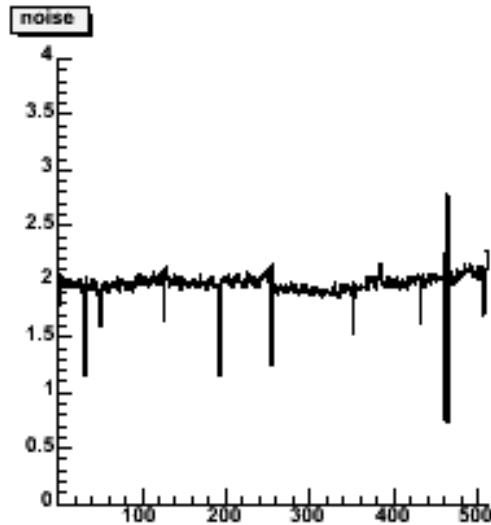
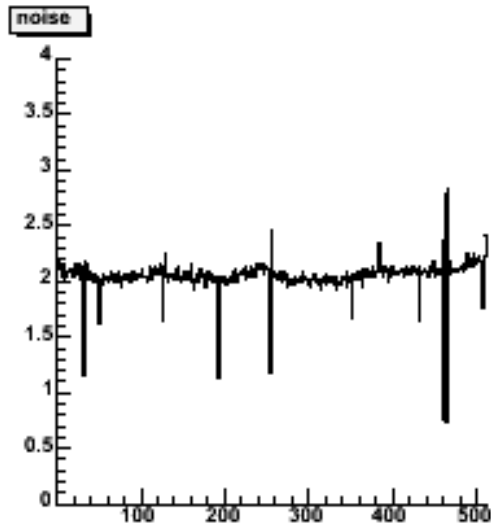


$20^\circ \rightarrow -20^\circ \rightarrow 20^\circ$



# Agreement (+20°): Antwerp - Louvain

UCL





# Agreement (+20°): Antwerp - Louvain



			641	2	3	8	26
Record0	PeakInvOn	Pedestal/Pedestal	YES	YES	YES	YES	YES
Record0	PeakInvOn	Noise/RawNoise	YES	YES	YES	NOT	YES
Record0	PeakInvOn	Noise/CMSubtractedNoise	YES	YES	YES	YES	YES
Record0	PeakInvOn	CommonMode/THcmn_0	YES	YES	YES	YES	YES
Record0	PeakInvOn	CommonMode/THcmn_1	YES	YES	YES	YES	YES
Record0	PeakInvOn	CommonMode/THcmn_2	YES	YES	YES	YES	YES
Record0	PeakInvOn	CommonMode/THcmn_3	YES	YES	YES	YES	YES
Record0	PeakInvOn	PulseShape/PulseHeight	YES	YES	YES	YES	YES
Record0	PeakInvOn	PulseShape/RiseTime	YES	YES	YES	YES	YES
Record0	PeakInvOn	Calibration/CalAmp	YES	YES	YES	YES	YES
Record0	PeakInvOff	Pedestal/Pedestal	YES	YES	YES	YES	YES
Record0	PeakInvOff	Noise/RawNoise	YES	YES	YES	YES	YES
Record0	PeakInvOff	Noise/CMSubtractedNoise	YES	YES	YES	YES	YES
Record0	PeakInvOff	CommonMode/THcmn_0	NOT	NOT	NOT	YES	NOT
Record0	PeakInvOff	CommonMode/THcmn_1	NOT	NOT	NOT	YES	NOT
Record0	PeakInvOff	CommonMode/THcmn_2	NOT	NOT	NOT	YES	NOT
Record0	PeakInvOff	CommonMode/THcmn_3	NOT	NOT	NOT	YES	NOT
Record0	PeakInvOff	PulseShape/PulseHeight	YES	YES	YES	YES	YES
Record0	PeakInvOff	PulseShape/RiseTime	YES	YES	YES	YES	YES
Record0	PeakInvOff	Calibration/CalAmp	YES	YES	YES	YES	YES
Record0	DeclInvOn	Pedestal/Pedestal	YES	YES	YES	YES	YES
Record0	DeclInvOn	Noise/RawNoise	NOT	NOT	NOT	YES	NOT
Record0	DeclInvOn	Noise/CMSubtractedNoise	NOT	NOT	NOT	YES	NOT
Record0	DeclInvOn	CommonMode/THcmn_0	YES	YES	YES	YES	YES
Record0	DeclInvOn	CommonMode/THcmn_1	YES	YES	YES	YES	YES
Record0	DeclInvOn	CommonMode/THcmn_2	YES	YES	YES	YES	YES
Record0	DeclInvOn	CommonMode/THcmn_3	YES	YES	YES	YES	YES
Record0	DeclInvOn	PulseShape/PulseHeight	YES	YES	YES	YES	YES
Record0	DeclInvOn	PulseShape/RiseTime	YES	YES	YES	YES	YES
Record0	DeclInvOn	Calibration/CalAmp	NOT	NOT	NOT	NOT	NOT
Record0	DeclInvOff	Pedestal/Pedestal	YES	YES	YES	YES	YES
Record0	DeclInvOff	Noise/RawNoise	NOT	NOT	NOT	YES	NOT
Record0	DeclInvOff	Noise/CMSubtractedNoise	NOT	NOT	NOT	YES	NOT
Record0	DeclInvOff	CommonMode/THcmn_0	NOT	NOT	NOT	YES	NOT
Record0	DeclInvOff	CommonMode/THcmn_1	NOT	NOT	NOT	YES	NOT
Record0	DeclInvOff	CommonMode/THcmn_2	NOT	NOT	NOT	YES	NOT
Record0	DeclInvOff	CommonMode/THcmn_3	NOT	NOT	NOT	YES	NOT
Record0	DeclInvOff	PulseShape/PulseHeight	YES	YES	YES	YES	YES
Record0	DeclInvOff	PulseShape/RiseTime	YES	YES	YES	YES	YES
Record0	DeclInvOff	Calibration/CalAmp	NOT	NOT	NOT	NOT	NOT



# Agreement (20°): Louvain - Louvain



Record0 (+20°) vs Record3 (+20°)

			641	2	3	8	26
Record0	PeakInvOn	Pedestal/Pedestal	YES	YES	YES	YES	YES
Record0	PeakInvOff	Pedestal/Pedestal	YES	YES	YES	YES	YES
Record0	DeclInvOn	Pedestal/Pedestal	YES	YES	YES	YES	YES
Record0	DeclInvOff	Pedestal/Pedestal	YES	YES	YES	YES	YES
Record0	PeakInvOn	Noise/RawNoise	YES	YES	YES	YES	YES
Record0	PeakInvOff	Noise/RawNoise	YES	YES	YES	YES	YES
Record0	DeclInvOn	Noise/RawNoise	YES	YES	YES	YES	YES
Record0	DeclInvOff	Noise/RawNoise	YES	YES	YES	YES	YES
Record0	PeakInvOn	Noise/CMSubtractedNoise	YES	YES	YES	YES	YES
Record0	PeakInvOff	Noise/CMSubtractedNoise	YES	YES	YES	YES	YES
Record0	DeclInvOn	Noise/CMSubtractedNoise	YES	YES	YES	YES	YES
Record0	DeclInvOff	Noise/CMSubtractedNoise	YES	YES	YES	YES	YES
Record0	PeakInvOn	CommonMode/THcmn_0	YES	YES	YES	YES	YES
Record0	PeakInvOff	CommonMode/THcmn_0	YES	YES	YES	YES	YES
Record0	DeclInvOn	CommonMode/THcmn_0	YES	YES	YES	YES	YES
Record0	DeclInvOff	CommonMode/THcmn_0	YES	YES	YES	YES	YES
Record0	PeakInvOn	CommonMode/THcmn_1	YES	YES	YES	YES	YES
Record0	PeakInvOff	CommonMode/THcmn_1	YES	YES	YES	YES	YES
Record0	DeclInvOn	CommonMode/THcmn_1	YES	YES	YES	YES	YES
Record0	DeclInvOff	CommonMode/THcmn_1	YES	YES	YES	YES	YES
Record0	PeakInvOn	CommonMode/THcmn_2	YES	YES	YES	YES	YES
Record0	PeakInvOff	CommonMode/THcmn_2	YES	YES	YES	YES	YES
Record0	DeclInvOn	CommonMode/THcmn_2	YES	YES	YES	YES	YES
Record0	DeclInvOff	CommonMode/THcmn_2	YES	YES	YES	YES	YES
Record0	PeakInvOn	CommonMode/THcmn_3	YES	YES	YES	YES	YES
Record0	PeakInvOff	CommonMode/THcmn_3	YES	YES	YES	YES	YES
Record0	DeclInvOn	CommonMode/THcmn_3	YES	YES	YES	YES	YES
Record0	DeclInvOff	CommonMode/THcmn_3	YES	YES	YES	YES	YES
Record0	PeakInvOn	PulseShape/PulseHeight	NOT	NOT	NOT	NOT	NOT
Record0	PeakInvOff	PulseShape/PulseHeight	NOT	NOT	NOT	NOT	NOT
Record0	DeclInvOn	PulseShape/PulseHeight	NOT	NOT	NOT	NOT	NOT
Record0	DeclInvOff	PulseShape/PulseHeight	NOT	NOT	NOT	NOT	NOT
Record0	PeakInvOn	PulseShape/RiseTime	YES	NOT	NOT	NOT	YES
Record0	PeakInvOff	PulseShape/RiseTime	YES	YES	YES	YES	YES
Record0	DeclInvOn	PulseShape/RiseTime	YES	YES	YES	YES	YES
Record0	DeclInvOff	PulseShape/RiseTime	YES	YES	YES	YES	YES
Record0	PeakInvOn	Calibration/CalAmp	NoH	NoH	NoH	NoH	NoH
Record0	PeakInvOff	Calibration/CalAmp	NoH	NoH	NoH	NoH	NoH
Record0	DeclInvOn	Calibration/CalAmp	NOT	NOT	NOT	NOT	NOT
Record0	DeclInvOff	Calibration/CalAmp	NoH	NoH	NoH	NoH	NoH



# Bad Channels (2): Antwerp - Louvain



## Comparison for Module 2

Record 0 (20°C)				
BadChDeclnOFF	BadChDeclnON	BadChPeakInnOFF	BadChPeakInnON	BadChList
1	no	1 256	no	All
1 33 128 193 256 270 433	1 33 193 256 270	1 33 128 129 193 256 257 270	1 33 193 256 257 270 433	All
33 128 193 256 353 433	33 128 193 256 353 433	33 128 193 256 353 433	33 128 193 256 353 433	
Record 2 (-20°C)				
BadChDeclnOFF	BadChDeclnON	BadChPeakInnOFF	BadChPeakInnON	BadChList
1 257	1	1	1	All
1 33 128 193 256 270	1 33 193 256 270	1 33 128 256 257 270 512	1 128 193 256 257 270 512	All
Record 3 (20°C)				
BadChDeclnOFF	BadChDeclnON	BadChPeakInnOFF	BadChPeakInnON	BadChList
1	no	1 256	no	All
1 33 128 193 256 270	33 193 256 270	1 33 128 129 193 256 257 270	1 33 193 256 257 270	All

Louvain    Antwerpen    Aachen (ARC) with Tony's macro



# Bad Channels (8): Antwerp - Louvain



## Comparison for Module 8

Record 0 (20°C)				
BadChDeclnOff	BadChDeclnON	BadChPeakInvOFF	BadChPeakInvON	BadChList
32 193 255 353 461 464 465 466	32 193 255 461 465	32 51 193 255 256 461 464 465 466	32 193 255 461 464 465 466	All
32 193 255 461 464 465 466	32 193 255 461 465	32 193 255 257 353 461 464 465 466	32 129 193 255 257 461 464 465 466	All
32 127 193 255 353 433	32 127 193 255 353 433	32 127 193 255 353 376 433	32 127 193 255 353 376 433	
Record 2 (-20°C)				
BadChDeclnOff	BadChDeclnON	BadChPeakInvOFF	BadChPeakInvON	BadChList
32 51 52 127 193 255 257 461 464 465 466	32 193 255 461 465	32 127 193 255 353 461 464 465 466	32 193 255 461 464 465 466	All
32 52 193 255 353 461 464 465 466	32 51 52 193 255 461 464 465 466	32 129 193 255 257 461 464 465 466	32 51 127 193 255 257 461 464 465 466	All
Record 3 (20°C)				
BadChDeclnOff	BadChDeclnON	BadChPeakInvOFF	BadChPeakInvON	BadChList
32 193 255 353 461 464 465 466	32 193 255 461 464 465	32 127 193 255 256 461 464 465 466	32 51 52 127 193 255 461 464 465 466	All
32 193 255 461 464 465 466	32 193 255 461 464 465 466	32 193 255 257 461 464 465 466	32 129 193 255 257 353 461 464 465 466	All

Louvain

Antwerpen

Aachen (ARC) with Tony's macro

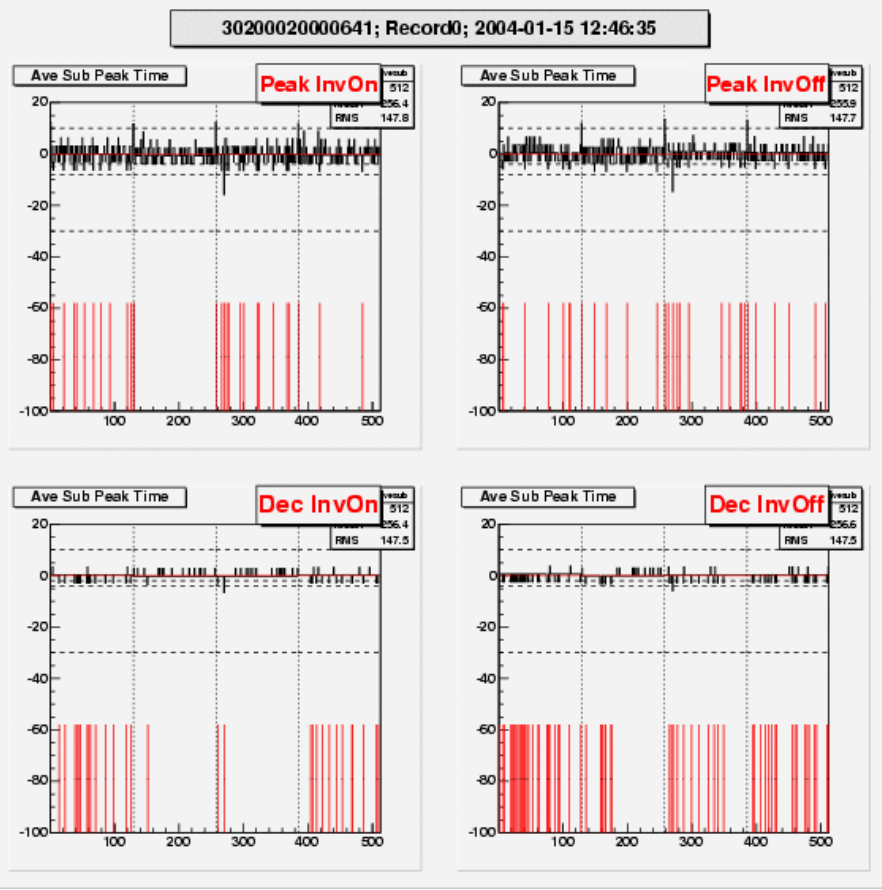
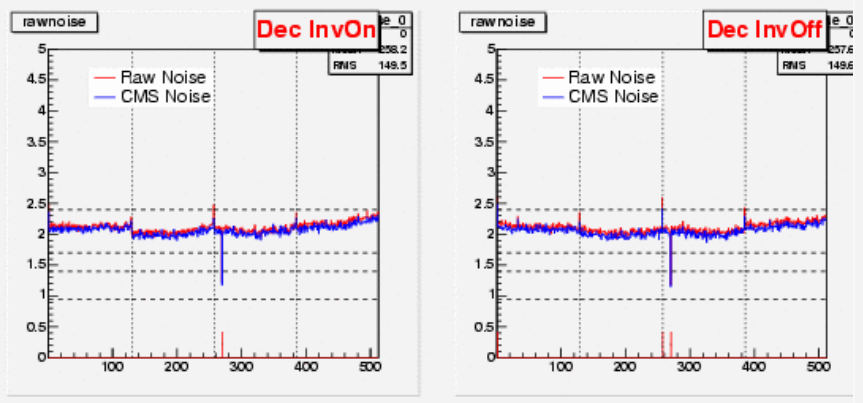
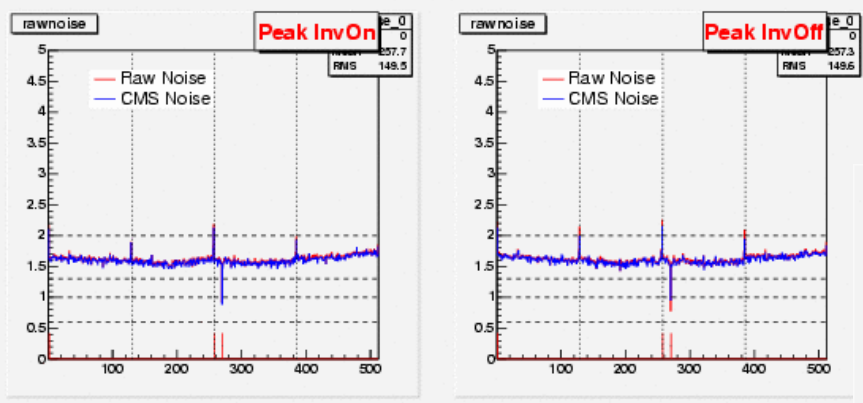


# Tony's macro for LT: Antwerp



Tanks Tony and Patrick Gartung

30200020000641; Record0; 2004-01-15 12:46:35



Peak Time analysis too restrictive:  
 - fitmode=0 in Lt software  
 => I skip this test in the following



# Bad Channels (TM): Antwerp - Louvain



Module 2: Record 0 (20°C)			
BadChDeclnOFF	BadChDeclnON	BadChPeakInvOFF	BadChPeakInvON
1 33 128 193 256 353	1 33 128 256 353	1 33 128 193 256 353 433	33 128 193 256 353 433
33 128 193 256 353 433	33 128 193 256 257 353 433	33 128 193 256 257 353 433	33 128 193 256 353 433
33 128 193 256 353 433	33 128 193 256 353 433	33 128 193 256 353 433	33 128 193 256 353 433

Module 8: Record 0 (20°C)			
BadChDeclnOff	BadChDeclnON	BadChPeakInvOFF	BadChPeakInvON
32 51 52 127 193 255 353 433 461 464 465 466 506-510	46 Channels	32 51 52 127 193 255 353 433 461 464 465 466 506-510	76 Channels
32 51 52 127 193 255 257 353 433 461 464 465 466 506-510	47 Channels	32 51 52 127 193 255 257 353 433 461 464 465 466 506-510	77 Channels
32 127 193 255 353 433	32 127 193 255 353 433	32 127 193 255 353 376 433	32 127 193 255 353 376 433

Bad PulseHeight for first APV

Louvain (Lt) with Tony's macro

Antwerpen (Lt) with Tony's macro

Aachen (ARC) with Tony's macro



# Bad Channels (TM): Antwerp - Louvain



<b>Module 3: Record 0 (20°C)</b>			
BadChDeclnOff	BadChDeclnON	BadChPeakInVOff	BadChPeakInVON
2 33 128 193 256 257	2 128 193 256 257 353	2 33 128 193 256 353 433	2 33 128 193 256 353 433
2 33 128 193 256 257 353 433	2 33 128 193 256 257 353 433	2 33 128 193 256 257 353 433	2 33 128 193 256 257 353 433
33 128 193 256 353 433	33 128 193 256 353 433	33 128 193 256 353 433	33 128 193 256 353 433
<b>Module 26: Record 0 (20°C)</b>			
BadChDeclnOff	BadChDeclnON	BadChPeakInVOff	BadChPeakInVON
33	33 257	33	33
1 33	1 33 257 385	1 33 257	1 33 257
<b>Module 641: Record 0 (20°C)</b>			
BadChDeclnOff	BadChDeclnON	BadChPeakInVOff	BadChPeakInVON
1 270	1 257 270	270	270
1 257 270	1 129 257 270 385	1 257 270	1 257 270

Louvain (Lt) with Tony's macro

Antwerpen (Lt) with Tony's macro

Aachen (ARC) with Tony's macro



# Summary



- Xcalibration in Louvain:
  - General good agreement for IV and pedestal
  - No agreement for noise and Bad Channel lists (**VUTRI adapter**)
  - Problem to reach  $-20^{\circ}$  in the coldbox
- What we have to do:
  - Connection between VUTRI adapter and cooling plate
  - Control the temperature of the dry air (**optional**)
- What we would like:
  - More modules (only 1 operational) to optimize our system
  - Try the same tests with the same modules in our active fridge
- Links:
  - Xcalibration Results:  
<http://www.fynu.ucl.ac.be/themes/he/cms/activities/tracker/Modules/multimodule/multimodule.html>
  - HW list in Louvain:  
<http://www.fynu.ucl.ac.be/themes/he/cms/activities/tracker/Modules/GInformations/inventory3.gif>



# Slow Control for petal longterm test (LabView 6.1)



- monitor the conditions of T and RH from the testing fridge;
- monitor and control the fridge cooling system, via T controller CAL-Controls 9400 (Strasbourg) or YOKOGAWA UP350 (LLN);
- monitor and control the cooling plant (via T controller CAL-Controls 9500P);
- control and monitor the HV (CAEN, ISEG);
- monitor the modules current (via electrometers included on K MUX or ISEG power supply);
- monitor the LV power supply currents (not yet decided ?);
- control the Karlsruhe multiplexer for HV channels switch;
- perform the IV measurements, at the DAQ request;
- send the TTL signal to the interlock card (LLN) to indicate the system is « alive »(via the NI PCI-6503 card);

Interlock checks: if  $RH > Rh_{\max}$   
or  $T_{\text{box}} > T_{\max}$



Switch OFF the HV power supply and wait until the conditions are fulfilled, then restart to « listen » the DAQ



# Slow Control for petal longterm tests

