

The background of the slide is a faded, repeating pattern of TEC (Thermoelectric Cooler) modules. Each module is a rectangular component with a central square area and various electrical connections and components on its surface.

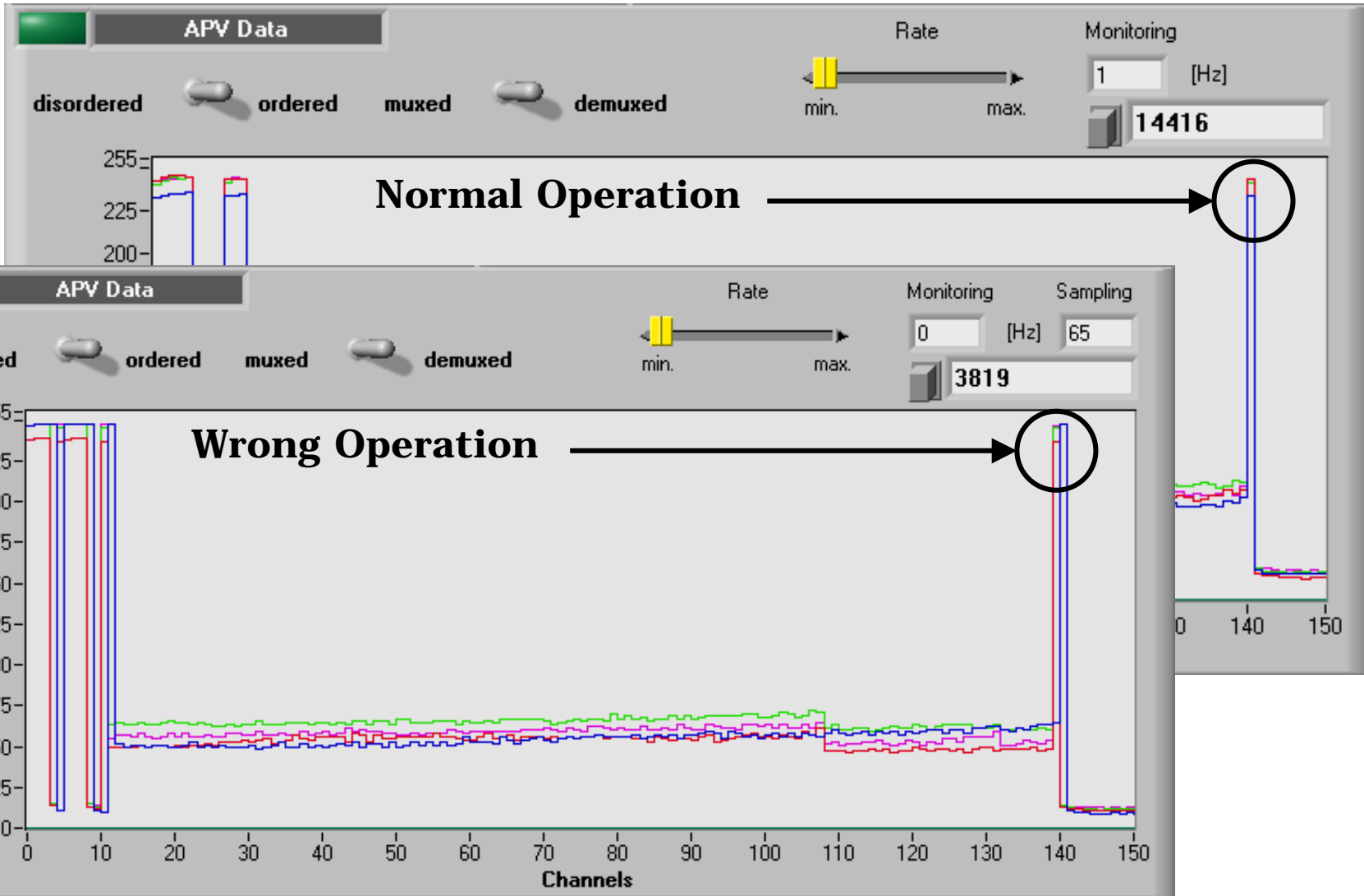
Latest Results on Express Line TEC Module Tests with ARC

III. Physikalisches Institut B

RWTH Aachen

- Possible problems with ARC
- Noise on APV edges
- Cooling tests with 4 TEC modules

Possible ARC Problem



- If you have reading problems with ARC:

Send board to Aachen

or

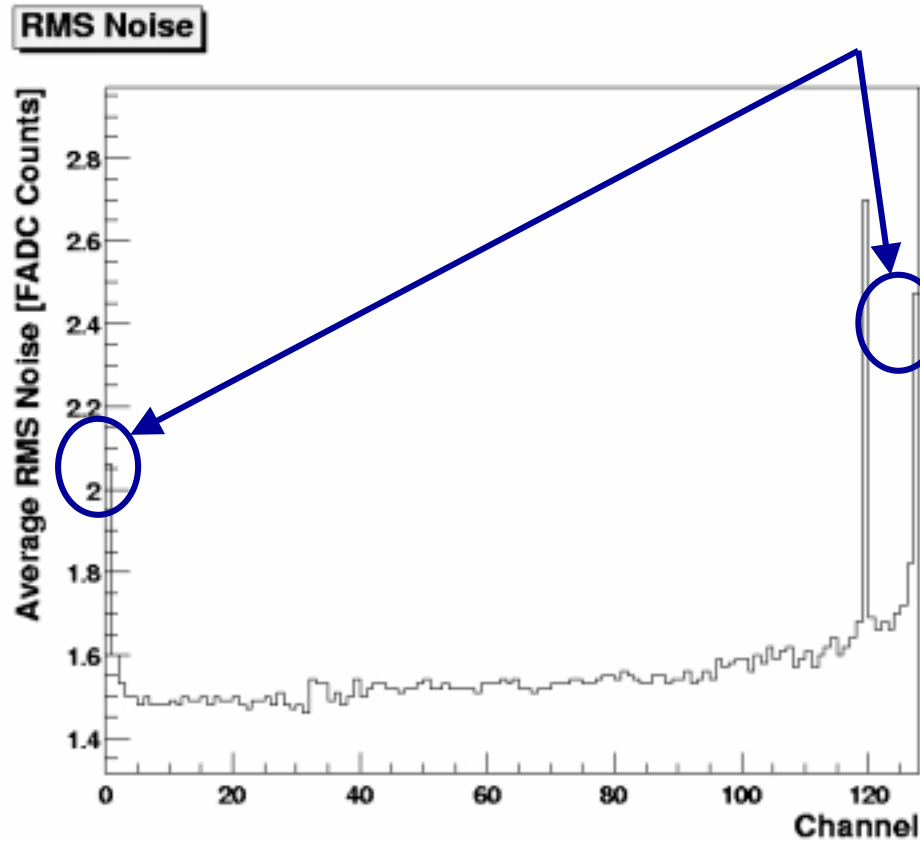
Bring board to the next Tracker Week ...

- Contact: beissel@physik.rwth-aachen.de
axer@physik.rwth-aachen.de

Noise of channels on the edges is often in the order of defect channels !

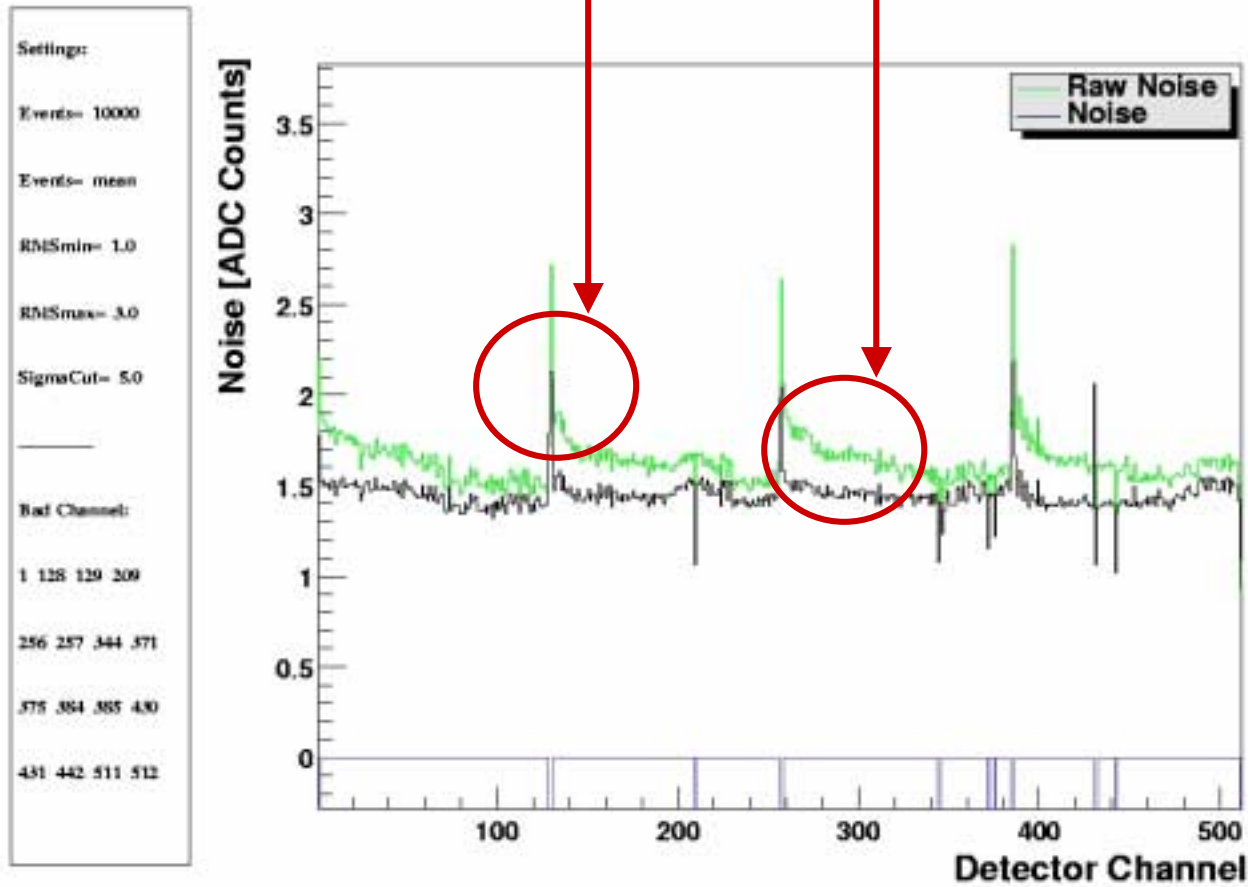
```

Chip Settings:
I2CAddress= 74
Mode= 43
Latency= 4
IPRE= 98
IPCASC= 52
IPSP= 34
ISHA= 34
ISSP= 34
IPSP= 55
IBLUXIN= 34
ISPARE= 0
ICAL= 29
VFP= 30
VFS= 60
VSP= 40
CDRV= 254
CSEL= 1
MUXGAIN= 4
Error= 0
-----
Cut: 5*RMS
Bad Channel:
0
119
127
    
```



edges not affected

distribution flattened



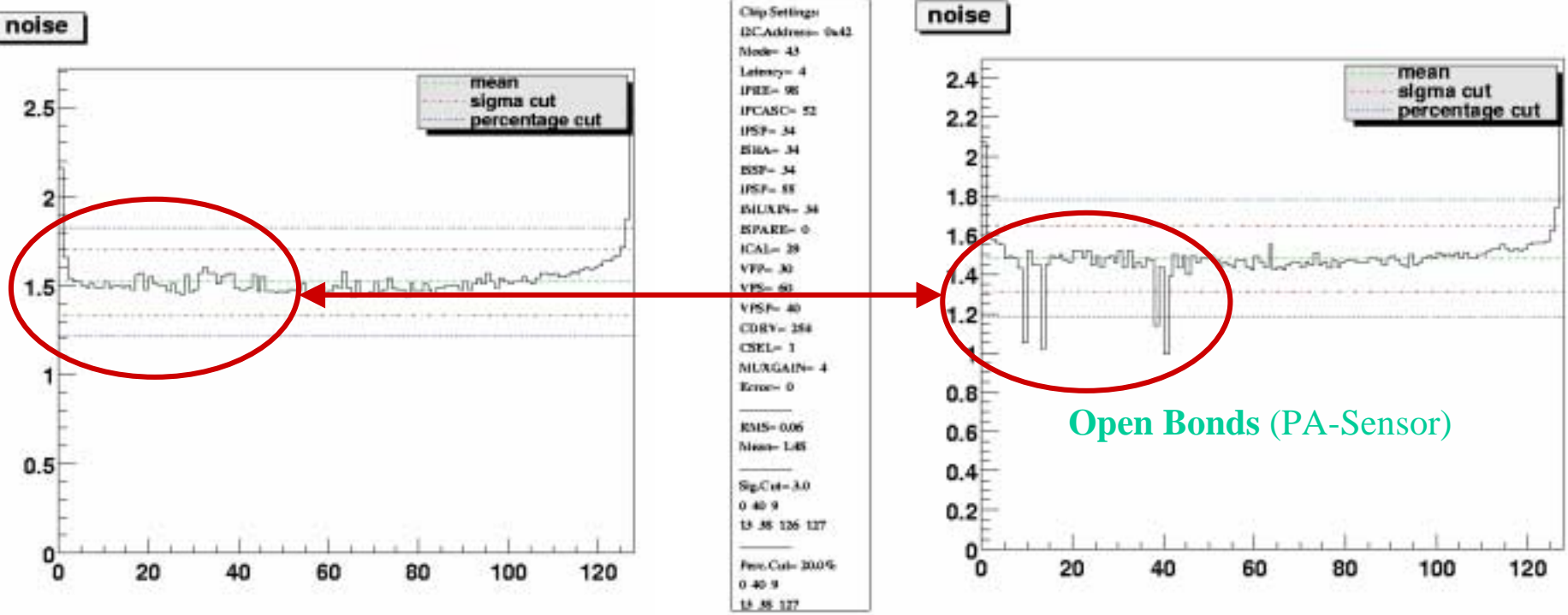
- Total test duration: ~ 8 hours
- Test procedure:
 - Module tests at room temperature (during flushing, at 300 V, ~15 min per module)
 - Cooling down to -12 °C (one hour of stable temperature)
 - Module tests at -12 °C
 - Heating up to 15 °C
 - Cooling down to -12 °C
 - Heating up to 15 °C
 - Module tests at 15 °C
- First trial: module 12
- Afterwards: module 12, 17, 27, 29

APV 0x42 before cycling

(measured at 15°C)

APV 0x42 after cycling

(measured at 15°C)



Thermal Cycling

4 TEC Modules, 2 ARC Boards

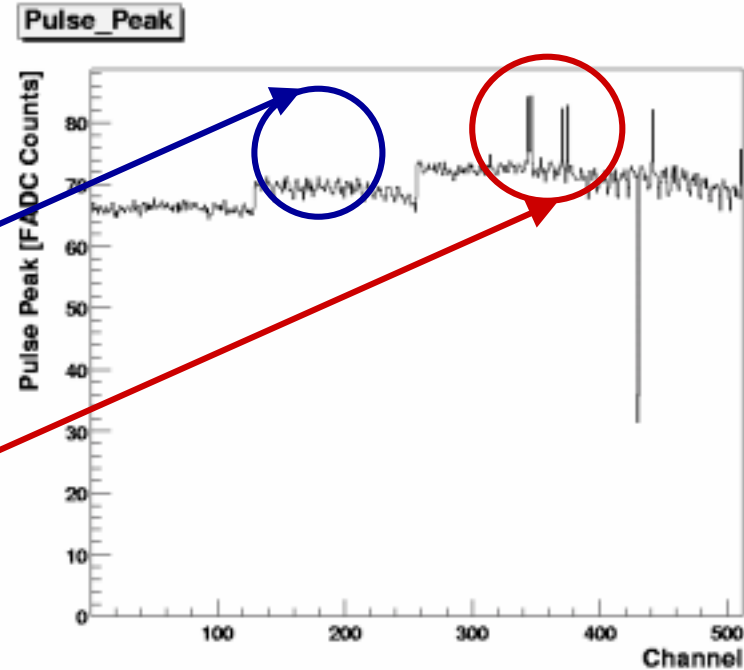
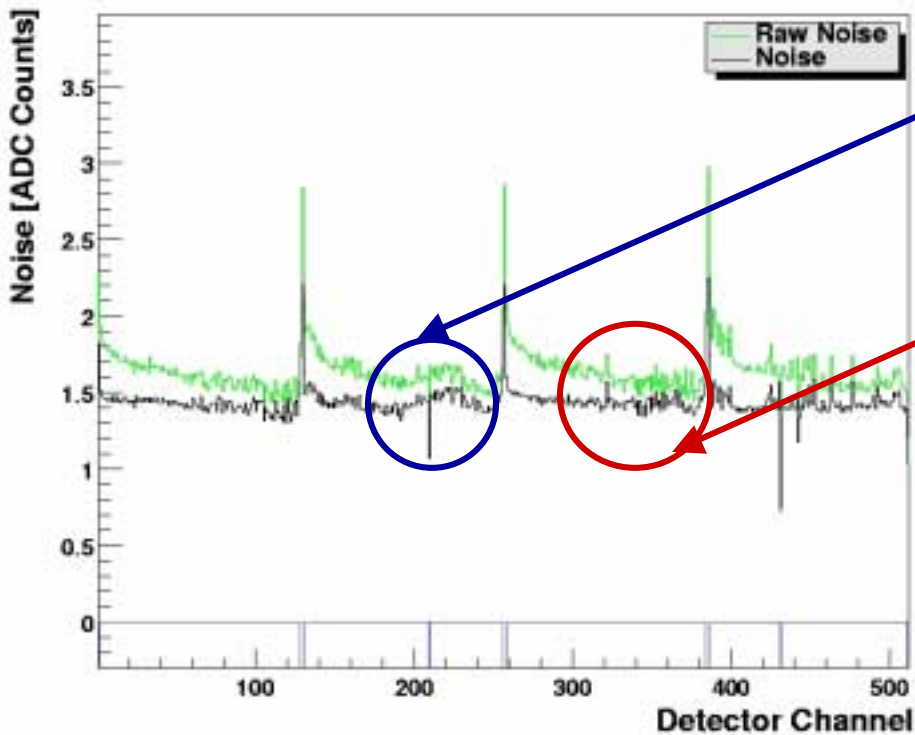
12 17 27 29



Cyclings
between 15°C
and -12°C

pulse shape peaks:

raw noise & common mode subtracted noise:



- Different tests show different results ...



First Thermal Cycling Results

- 3 of 4 modules are not affected by thermal cycling (3 times between 15°C and -12°C)
- At low temperature different tests show different results:
 - Can this be used for error characterization?



Location of Test Results

- **Homepage Aachen III CMS Group:**
www.physik.rwth-aachen.de/group/IIIphys/CMS/tracker/en/index.html
- Link: “Test Results”
- ARCS 5.0 available this week including a tool for postscript & root file creation