

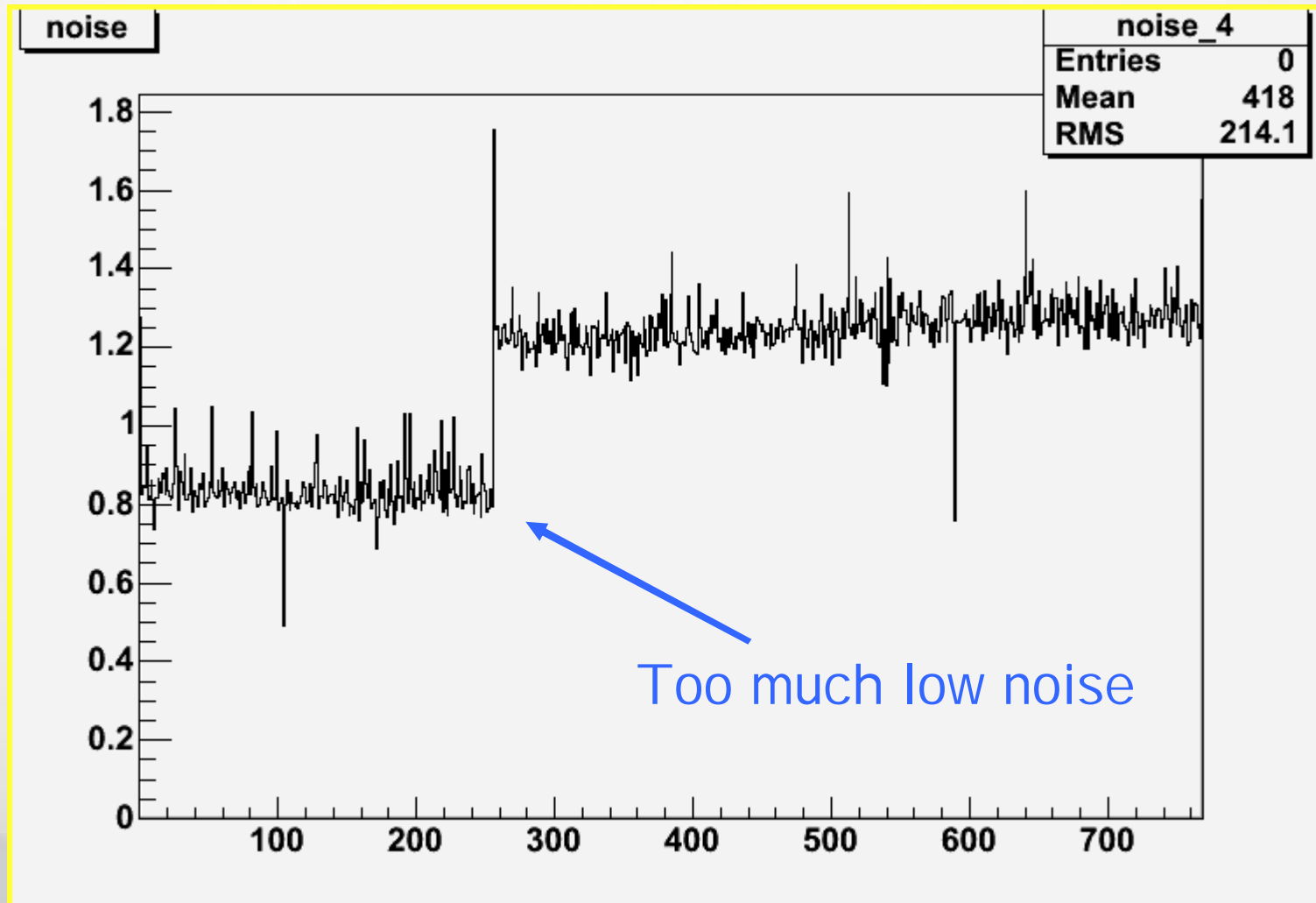
...Solving LT Problems

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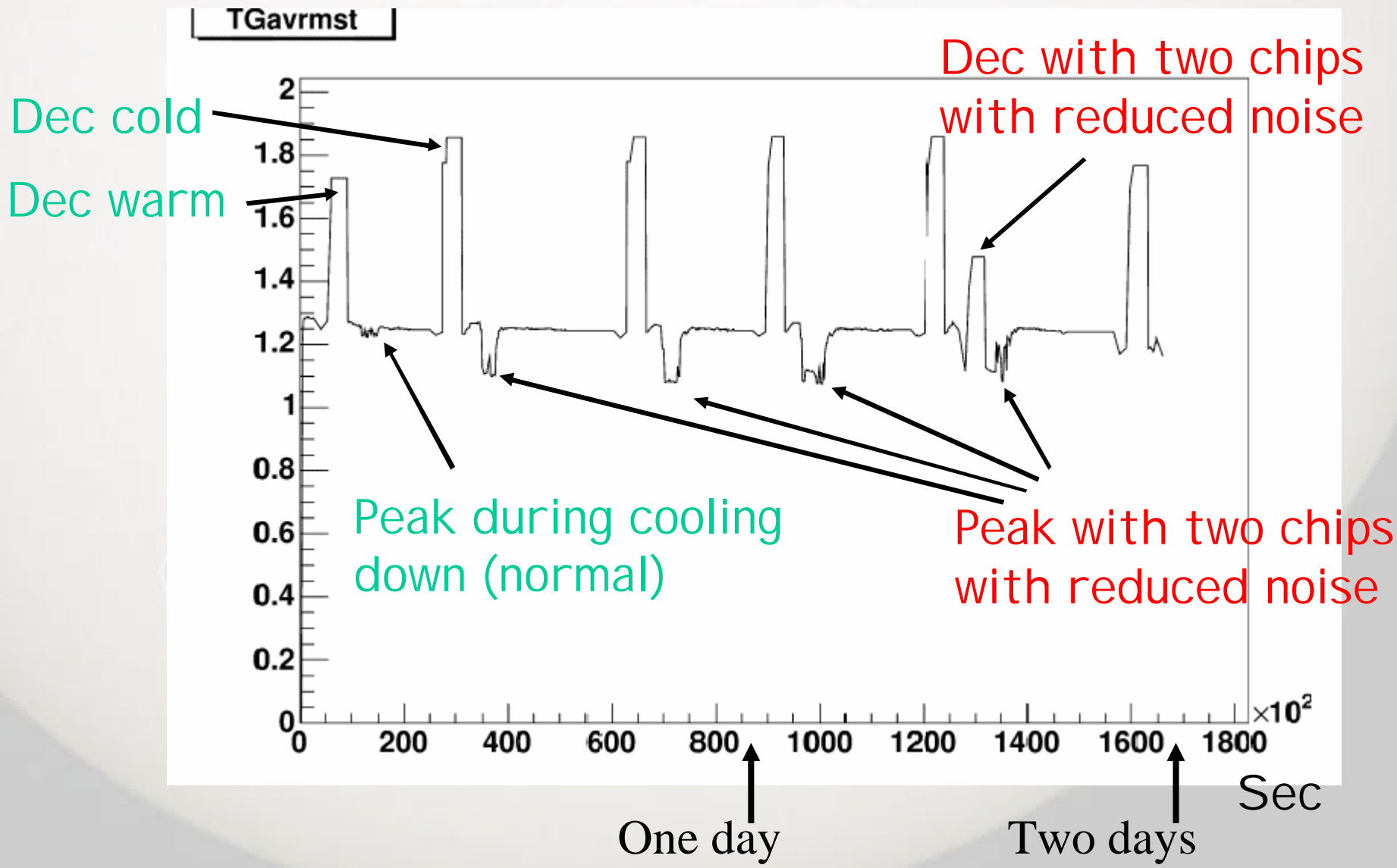
LT Problems in Florence

- Two kind of intermittent problems:
 1. Noise/calibration values **reduced** on some **APV couples** with reduction factor between 0.5 and 1
 2. FEC server **fails** randomly **~1/day** without any apparent reason after the system upgrade to two **ccu25**
- Problem 1) affects 4 slots out of 10
- Problem 2) reduced to zero the production efficiency

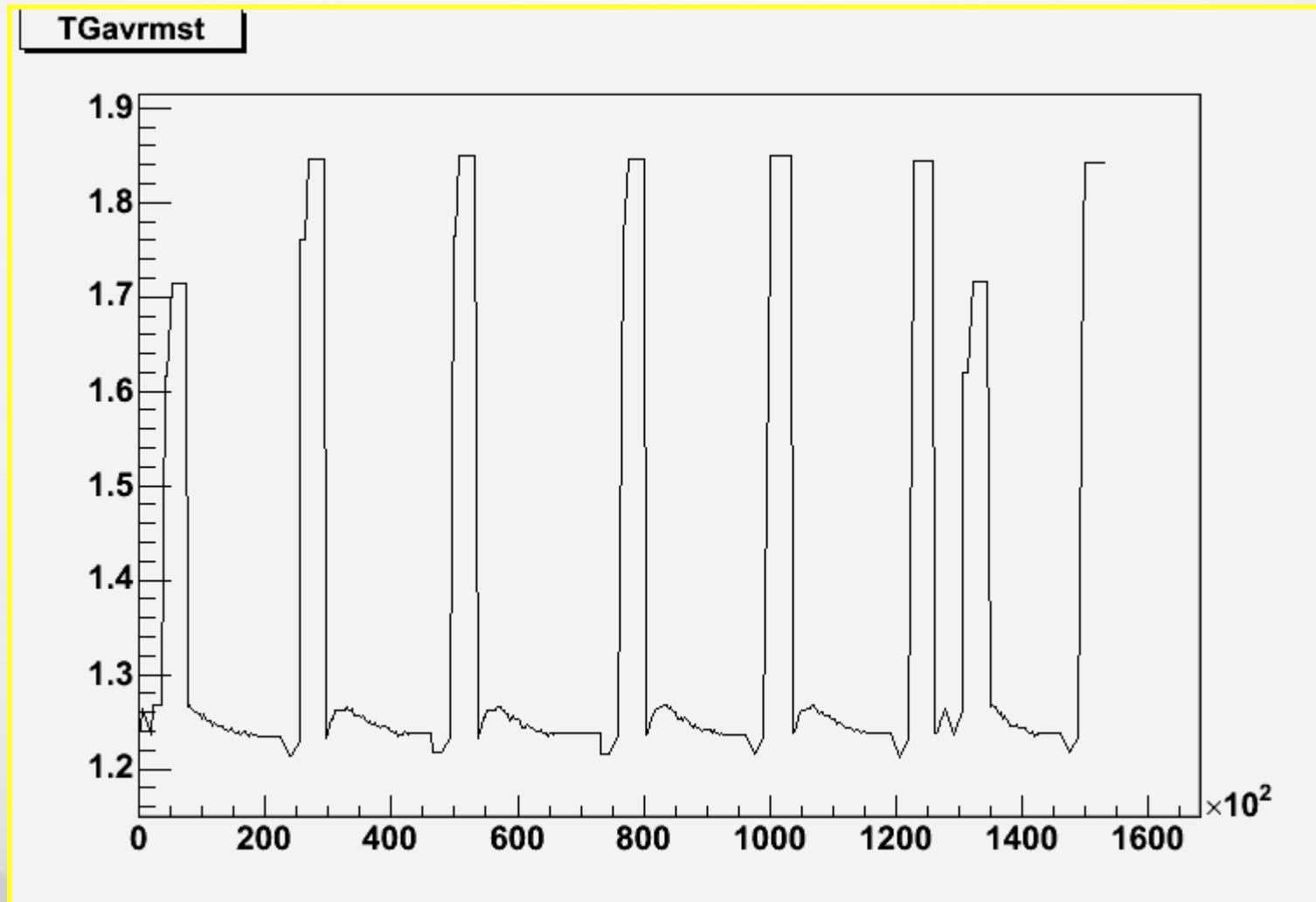
A noise reduction example (seen also by other TIB groups)



Module averaged noise Vs time during an LT run



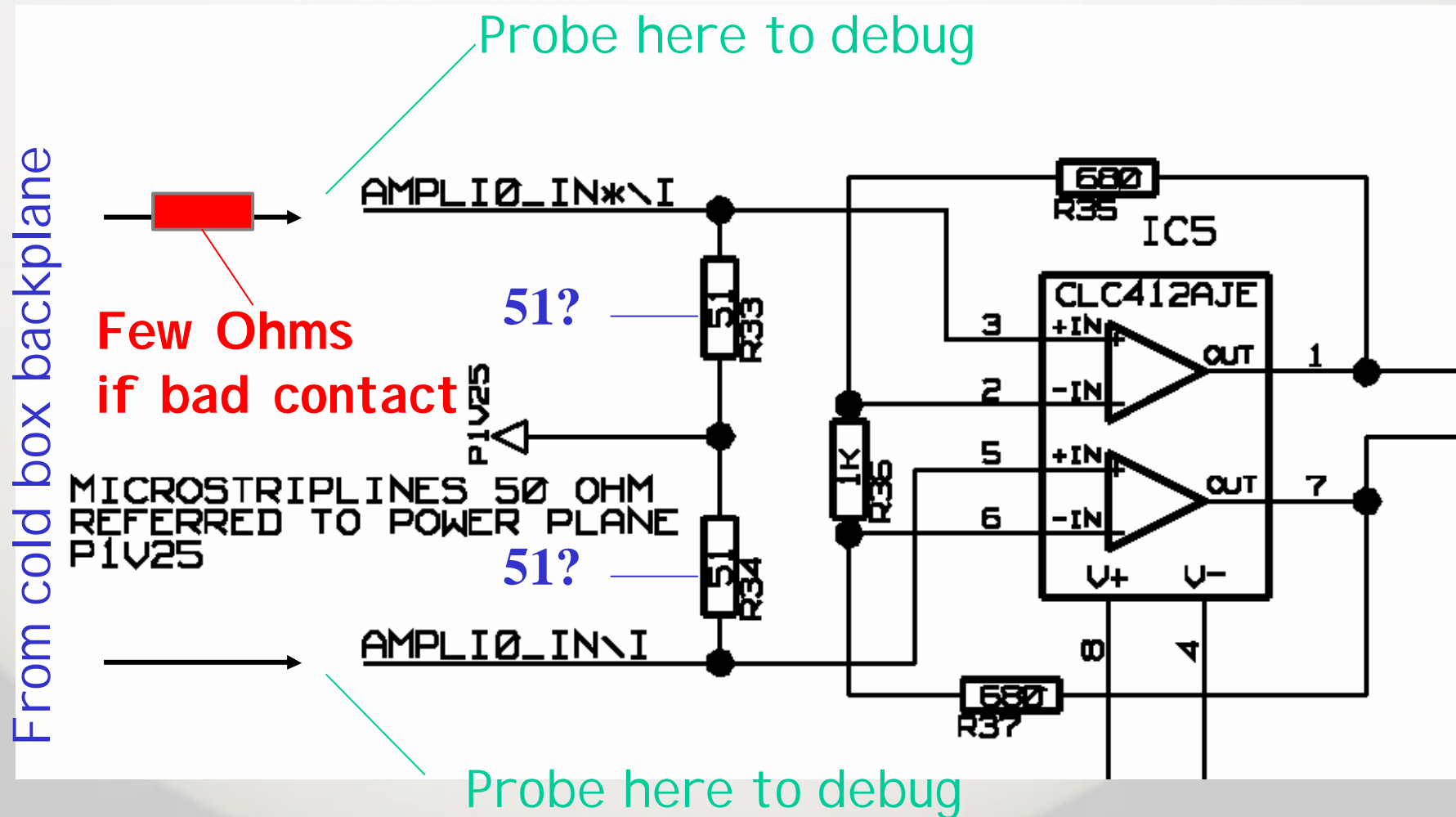
Same as before for a good module...



Some phenomenology

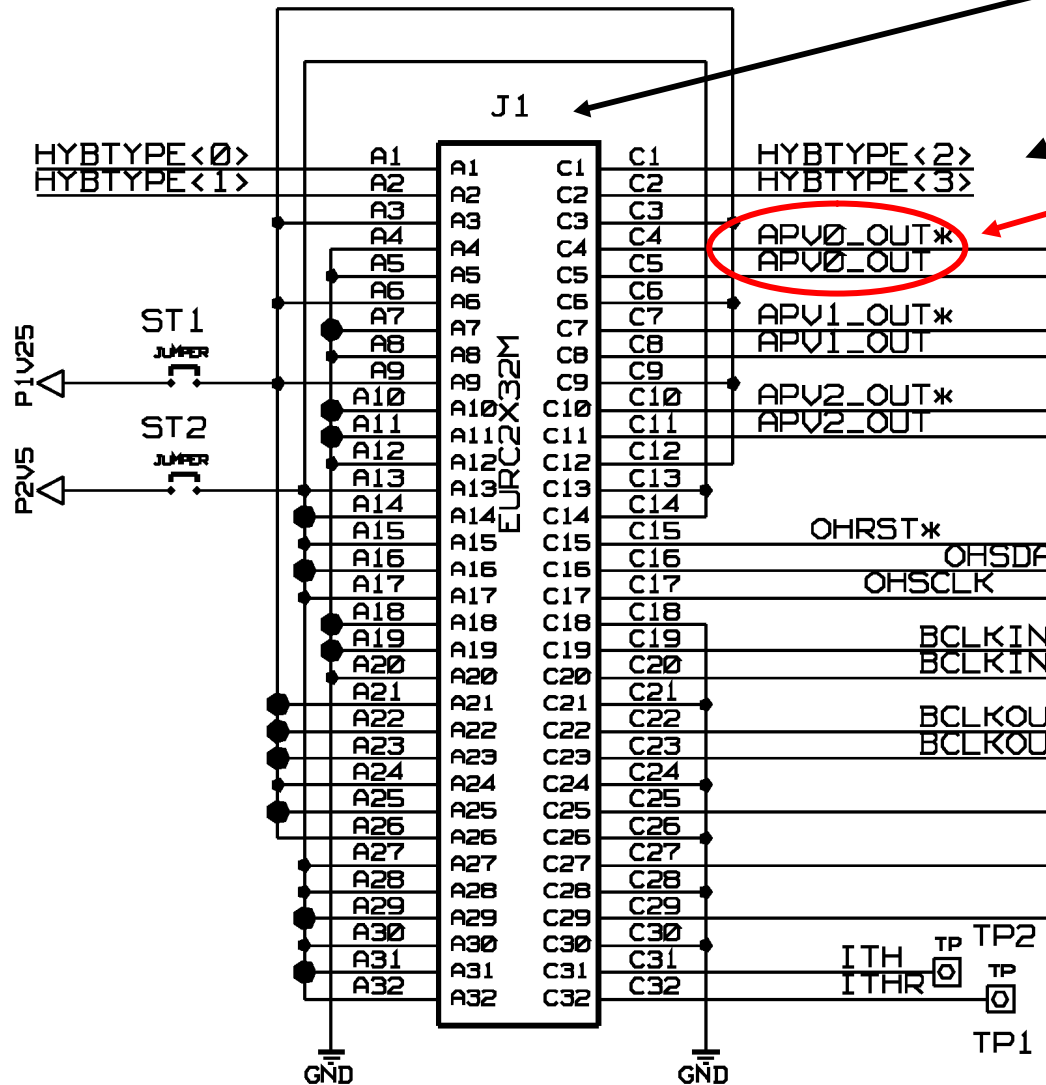
- The noise reduction always comes on the first couple of APVs
- Moving the module on a 'good' slot and repeating the LT run the problem disappears
- The problem appears when temperature changes
- After some debugging we traced the problem to a bad (resistive) contact on the cold box backplane

VUTRI scheme



A simple solution...

Vienna box backplane pinout



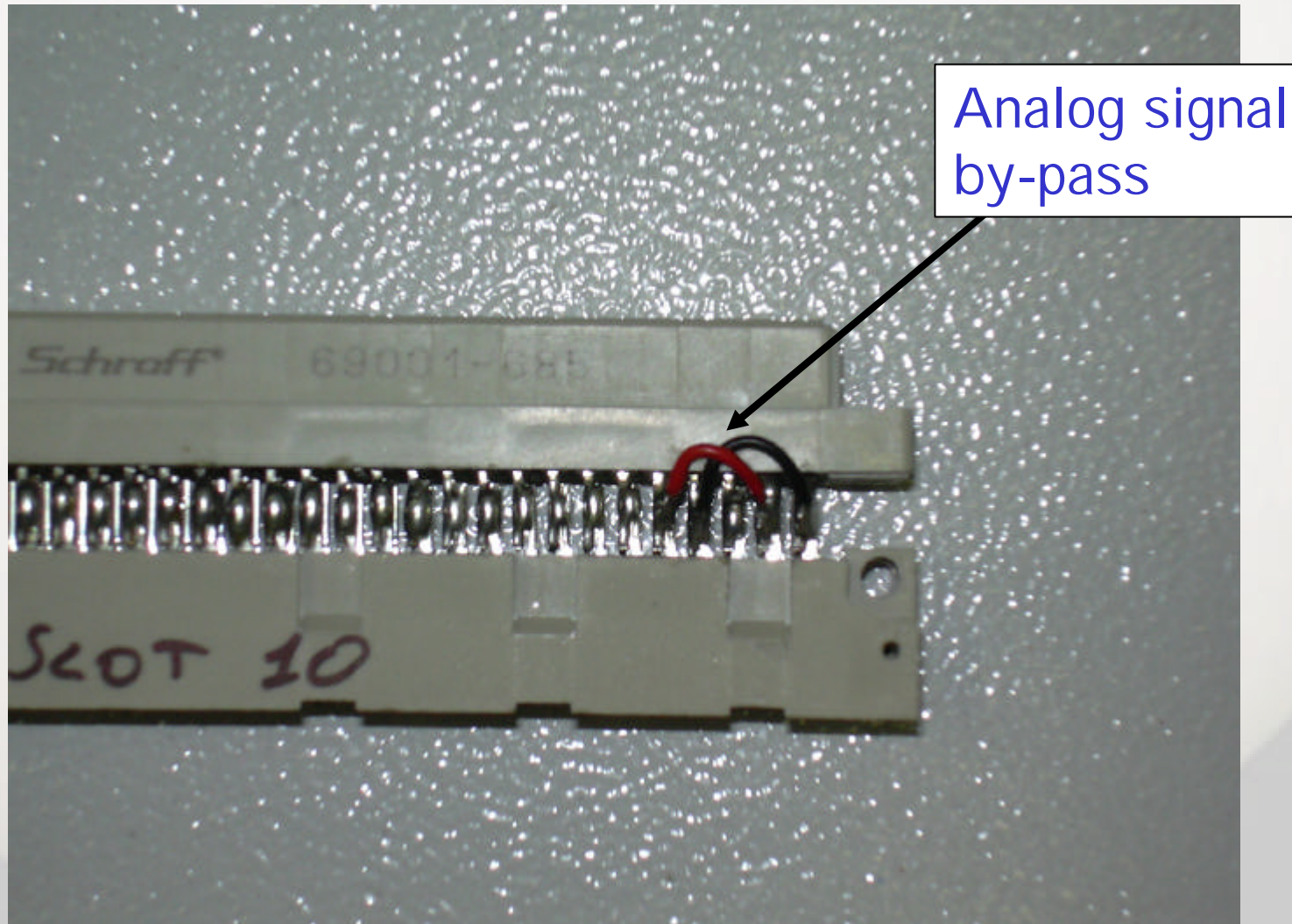
Lines not used

Analog lines

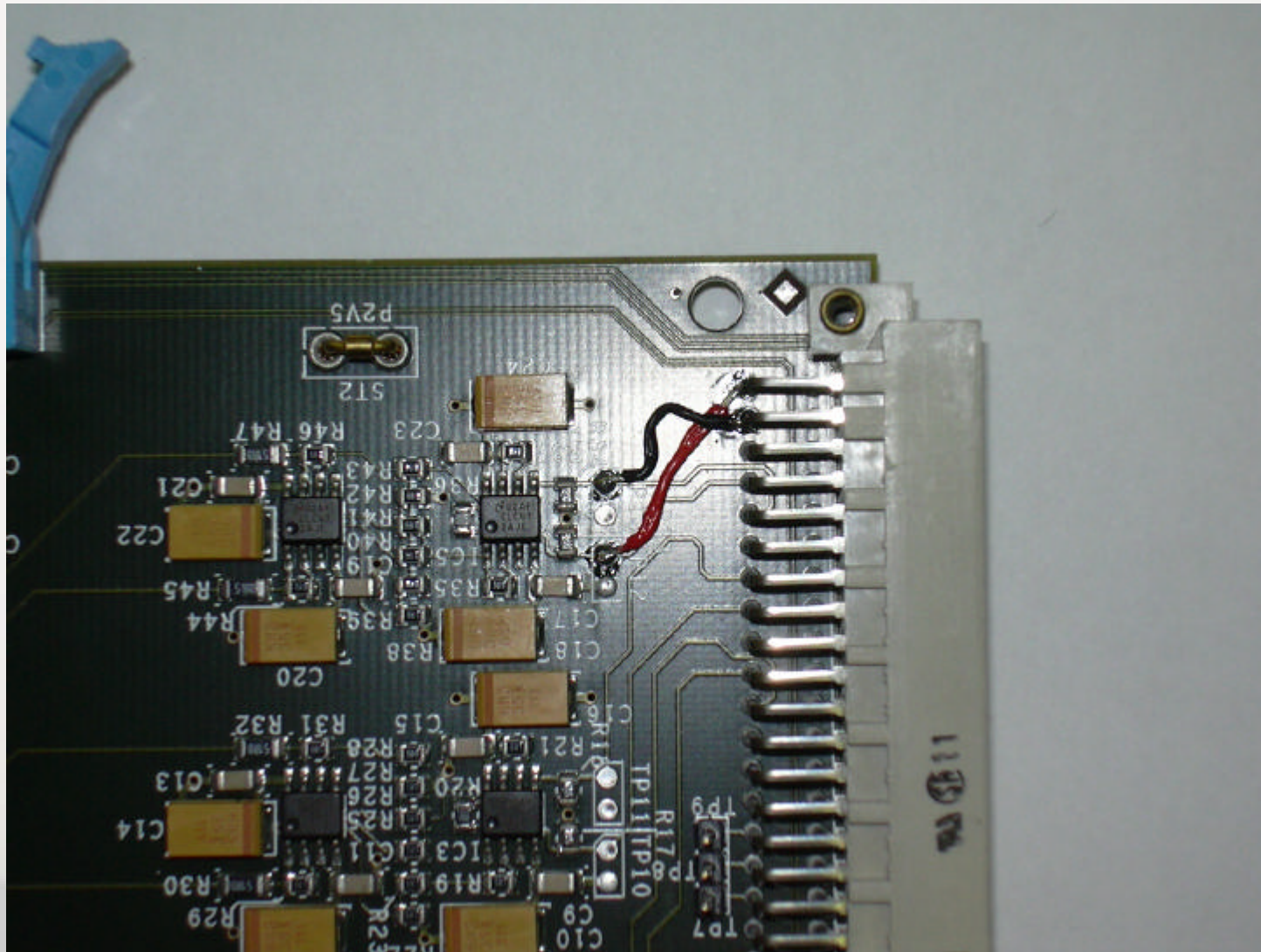
We can re-route the APV analog lines using the free lines giving redundancy to the system (good lines in parallel to the faulty one)

A bypass is needed on the VUTRI card also

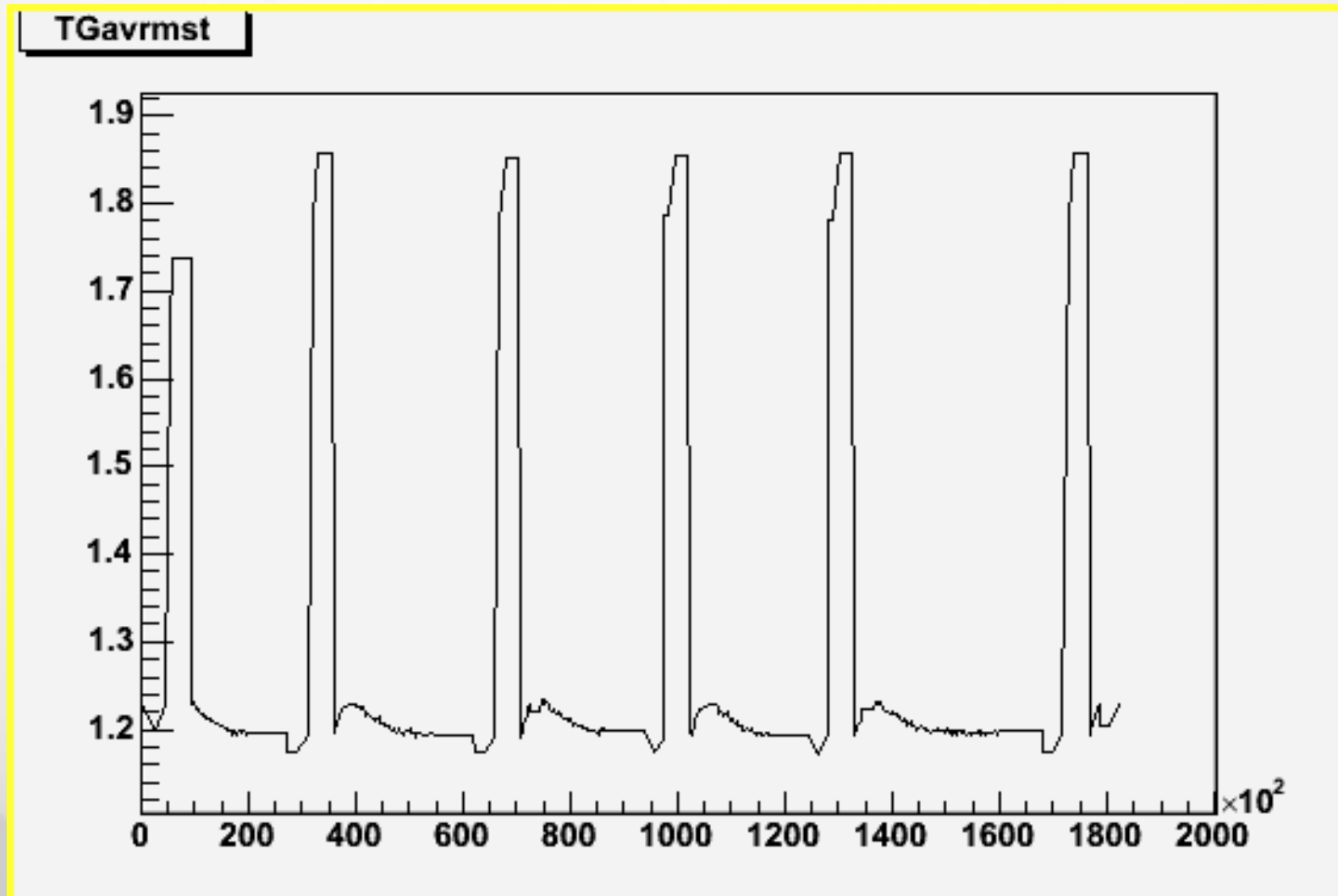
On the Vienna box extender...



...on the VUTRI card



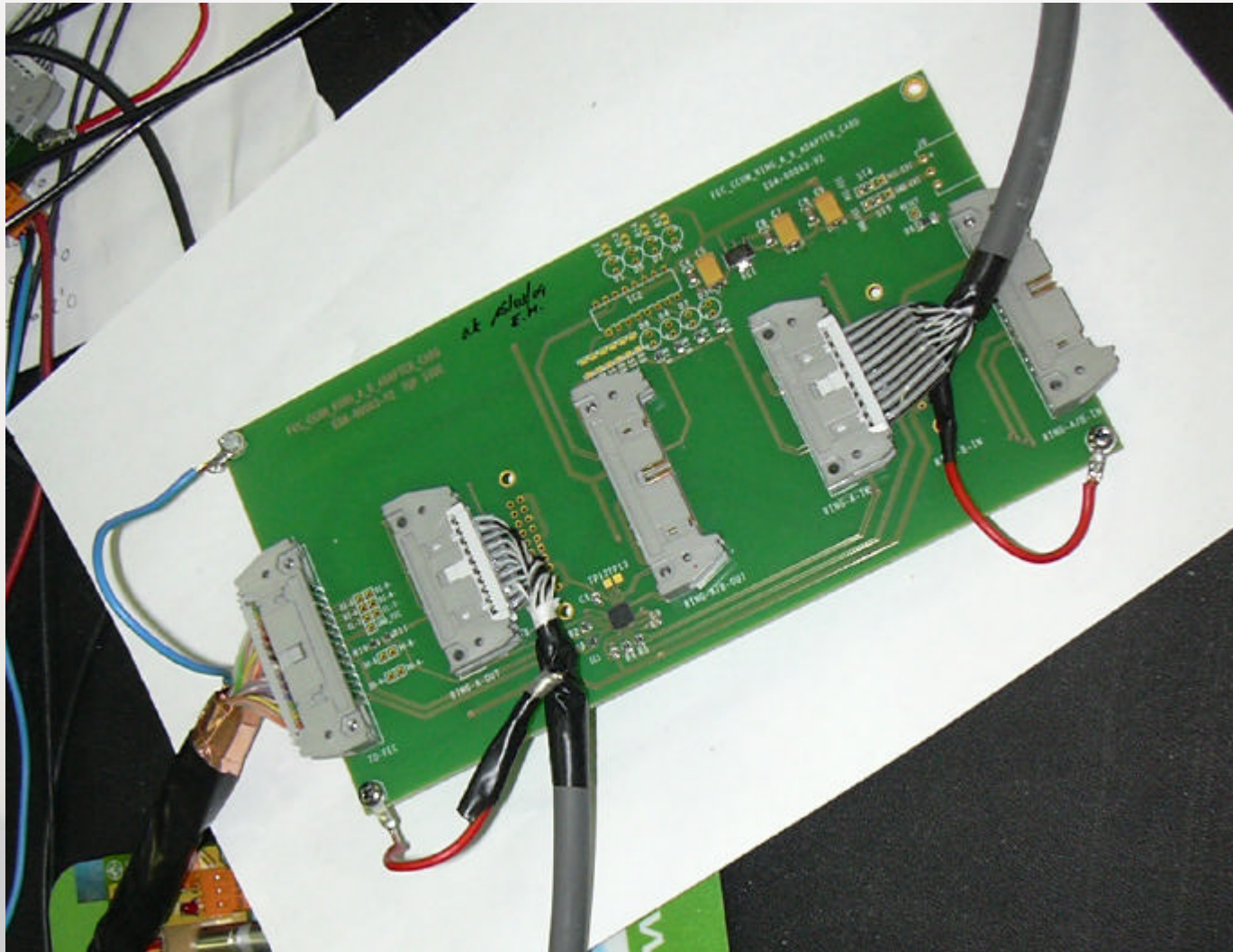
From a recent LT run ...OK



Problem 2: FEC server crashes

- The LT system stopped randomly because the FEC server crashes.
- It was quite impossible to debug.
- The solution was to completely rebuild the CCU ring ground connections using shielded cables.
- After three weeks of almost continuous running we experienced no more crashes of this kind.

Some ground connections...



Conclusions

- After the **CCU25** upgrade we discovered two problem that, potentially, could reduce **to zero** the LT test efficiency.
- The **ring instability** was traced down to **ground connection problems**
- The **noise anomalies** was generated by **resistive contacts** on the Vienna box backplane.
- Both problems are now (hopefully) **solved**.
- Ready for the **next one...**