

Module Test WG

A Short Summary

Leftovers from last module construction meeting

- Order for 60 (30 TIB + 21 TEC) VUTRI cards has now been placed in Italy
 - components procurement almost complete, 8 weeks for production
- To reduce cost:
 - Simple electrical tests in Pisa with INFN resources
- Price: 295 euro per Vutri (including Tax)
- PAACB adapter (Wim B.), numbers given in Dec to Wim, wait for news
- ERNI to VME adapter
 - A new batch will be produced with a redesigned layout for TIB, no news since Dec.

Vienna Cold Boxes

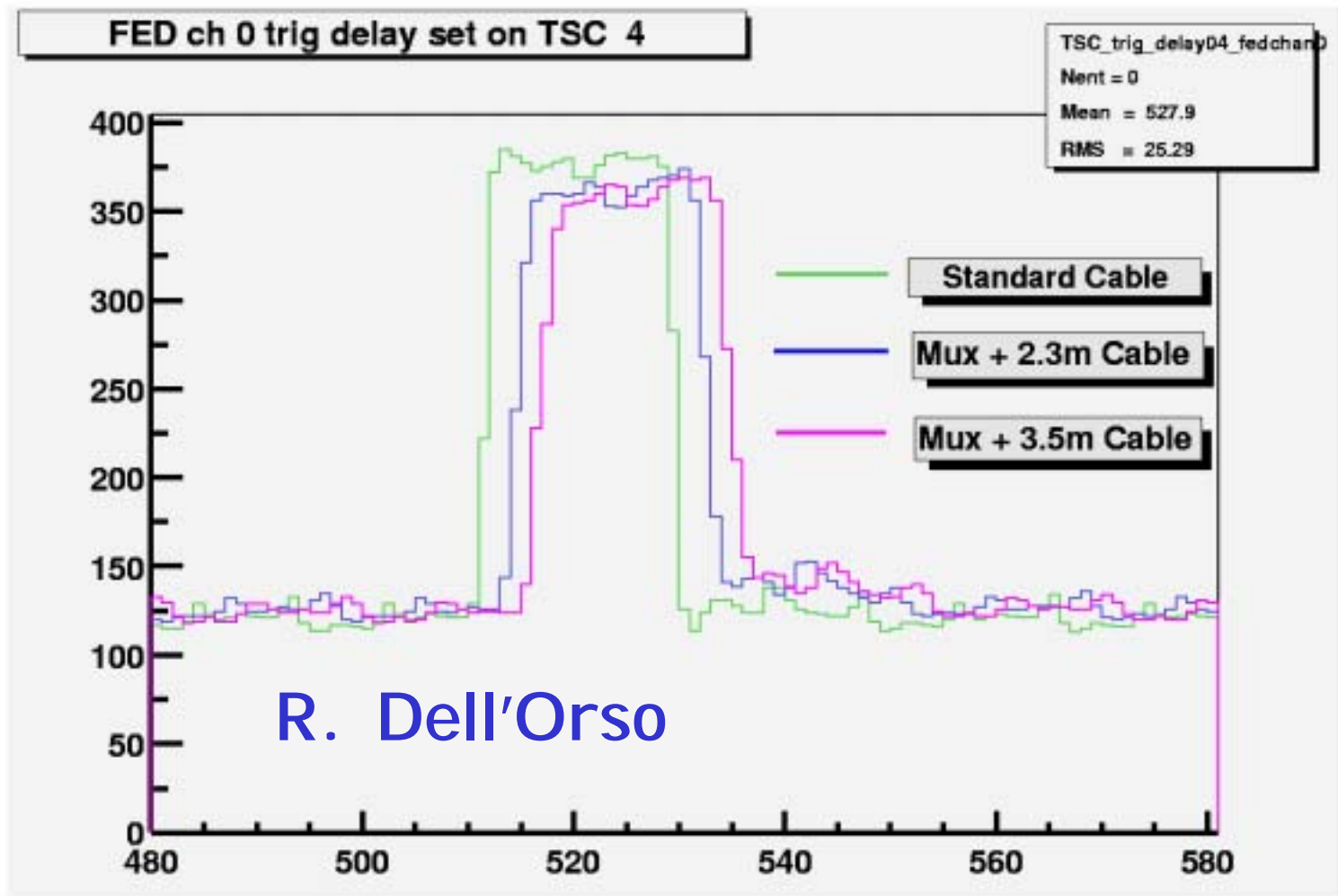
- New production batch
 - 1 TEC delivered to Antwerpen, in December, working
 - 1 TIB delivered to Torino in January
 - Next deliveries 1 for TOB and 1 for TIB (Pisa), soon ready for shipping
- Other requests to be satisfied:
 - 1 for TOB + 4 for TIB (FI, CT, PD, BA)

estimates about delivery ?

MUX and Cables

- Karlsruhe MUX: noise and pulse measurements OK, delivery started
- Studies on old type thick cables (Weiler) showed no problems up to 2.5 m (+1.2 m from vutri to MUX: these cables are soldered to mux pcb)
- Pisa (R. Dell'Orso) in December volunteered to measure performance with new "thin" standard CERN cables and VUTRI cards, to find optimal length for the test setups. Then cable production at CERN can start

Tick Mark reconstruction using TuneFed



Conclusions (on cables...)

- Good performances with Multiplexer + **2.3m of CERN cable** (total length 3.5m)
- A cable length of 3.5m (total length 4.7m) starts to become critical:
 - Tick mark flat region: 42 ns
- Results based on 1 MUX/FED channel

R. Dell'Orso

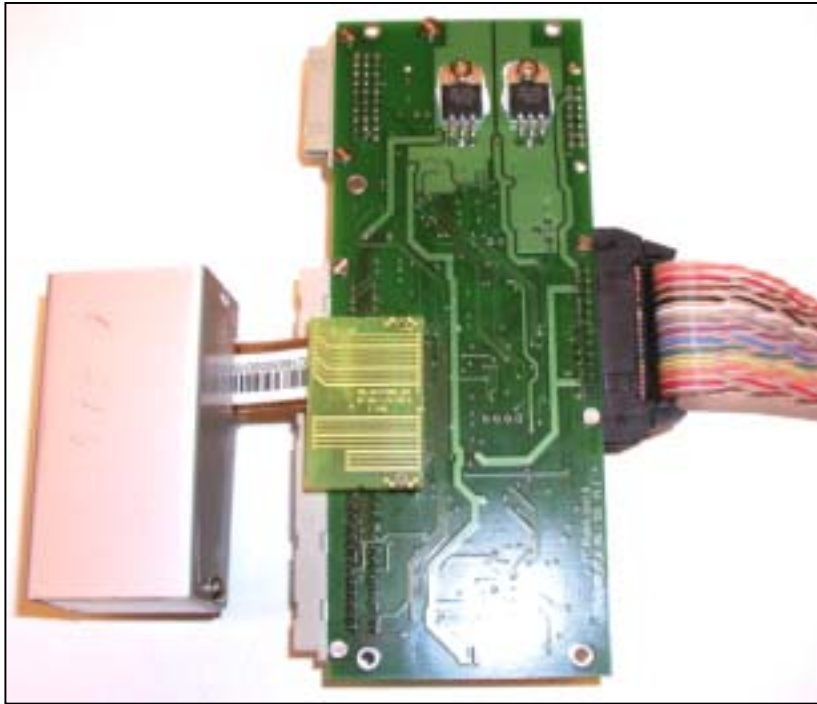
Mod Test Proposal

1.8 m long cables, if no objections (fast! end of next week deadline) from people already using Vienna boxes arise

The New ARC Frontend

- Status:
 - 25 PCBs assembled
 - All will be tested until end of this week

T. Franke



Setup for Hybrid Tests using the ERNI connector at the backside
Marco Meschini, INFN Firenze



Setup for Module Tests

Noise with New FE ARC Adapter

T. Franke

- Old and new Frontend adaptor give the same results
 - Mean noise of a certain APV is identical
 - Noise of healthy channels within statistical variations
 - With new FE adaptor smaller at module edges if carrier plate is grounded
- Small differences for faulty channels

Tests and SW

- LED test to identify pinholes:
 - More investigations have been done: evidence of cases in which the pinholes are identified only with LED test AND only in a particular range of induced current in the silicon crystal.
- Automatic test is a complicated task especially from the analysis point of view
- We have no statistics up to now to say if the number of pinholes which escape sensor qualification AND module test (without LED test) is a SIGNIFICANT NUMBER
- Very important issues: do we create damages in the module during LED test (large currents artificially injected in crystal surface layers)? Do we start an early ageing process? (See also T. Affolder talk)
- A worrying fact: in the last 2 months NEW pinholes appear on good modules ! Still looking for an explanation
- LT tests are fundamental, see CDF experience
- More work and study are absolutely needed, but very few groups are equipped to do the job

Long Term SW

- Laurent and Wim worked together at cern for new improvements (speeding up calibration, mux integration etc.)
- Migration to common Linux release now compulsory, see installation instructions on web page. Installation scripts work smoothly only if you follow all prescriptions
- LT sw version 0.80 in “beta test” stage now, will be released in less than 2 weeks if no major problems pop up (Cristiano Marchettini, Firenze, has been requested to be a beta tester...)

Database & Co.

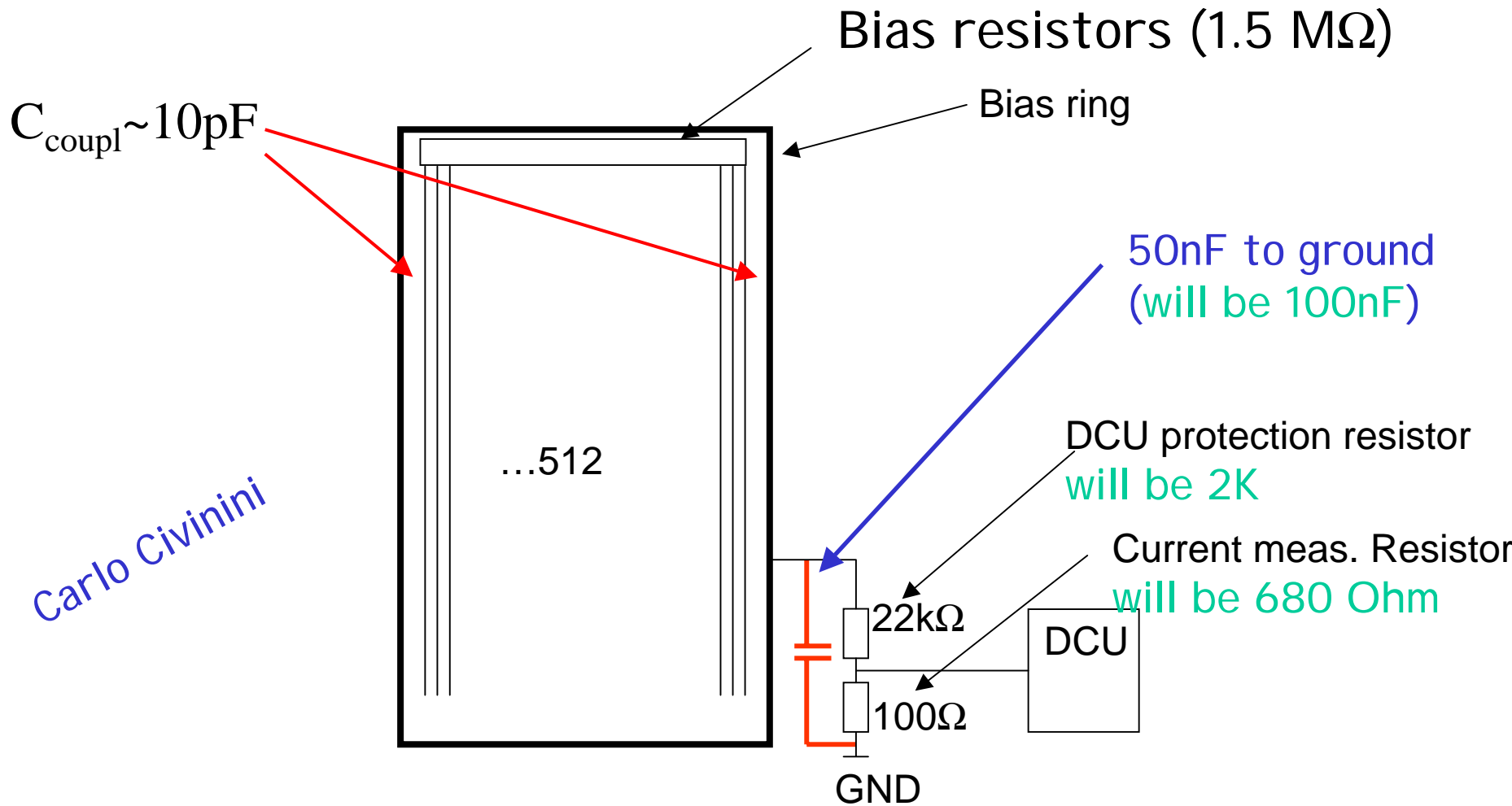
- A lot of work has been done, but a lot more has to be done on the DB for module test
- Starting from the document on test procedures of March 2002, DB actions and tables were prepared and put on web: no reactions to these ones until last December (Didier et al.)
- A small group of people directly involved in module test (sw + hw) and DB met twice this week to try to solve problems. Some modifications to actions have been proposed: this implies more work to do, but the manpower is always the same. No solution, unless new forces are found. Nobody volunteered to join the team. Obvious time delay consequence
- Apart from lack of manpower, we are on the right way but it is absolutely necessary that people start using the available tools (as soon as they are released) to understand if they satisfy our needs.
- An important comment: we cannot write into production central DB every single measurement we have in mind, otherwise we will never converge.

Other Good News...

- C. Civinini presented studies on noisy strips (and a study on strip noise).
- Major results:
 - The long time known problem of **noisy strips at detector edges can be solved** with a capacitor in parallel to the resistor on the HV gnd return on hybrids. This modification has been already implemented by J.D. Berst in the layout
 - **There is anti-correlation in noise between adjacent strips**
 - Noise distributions (sigmas) show that a 20% cut is very conservative, **we can probably adopt higher thresholds (50% ?) without degradation of global module performance**. The FED output rate should be only very marginally affected

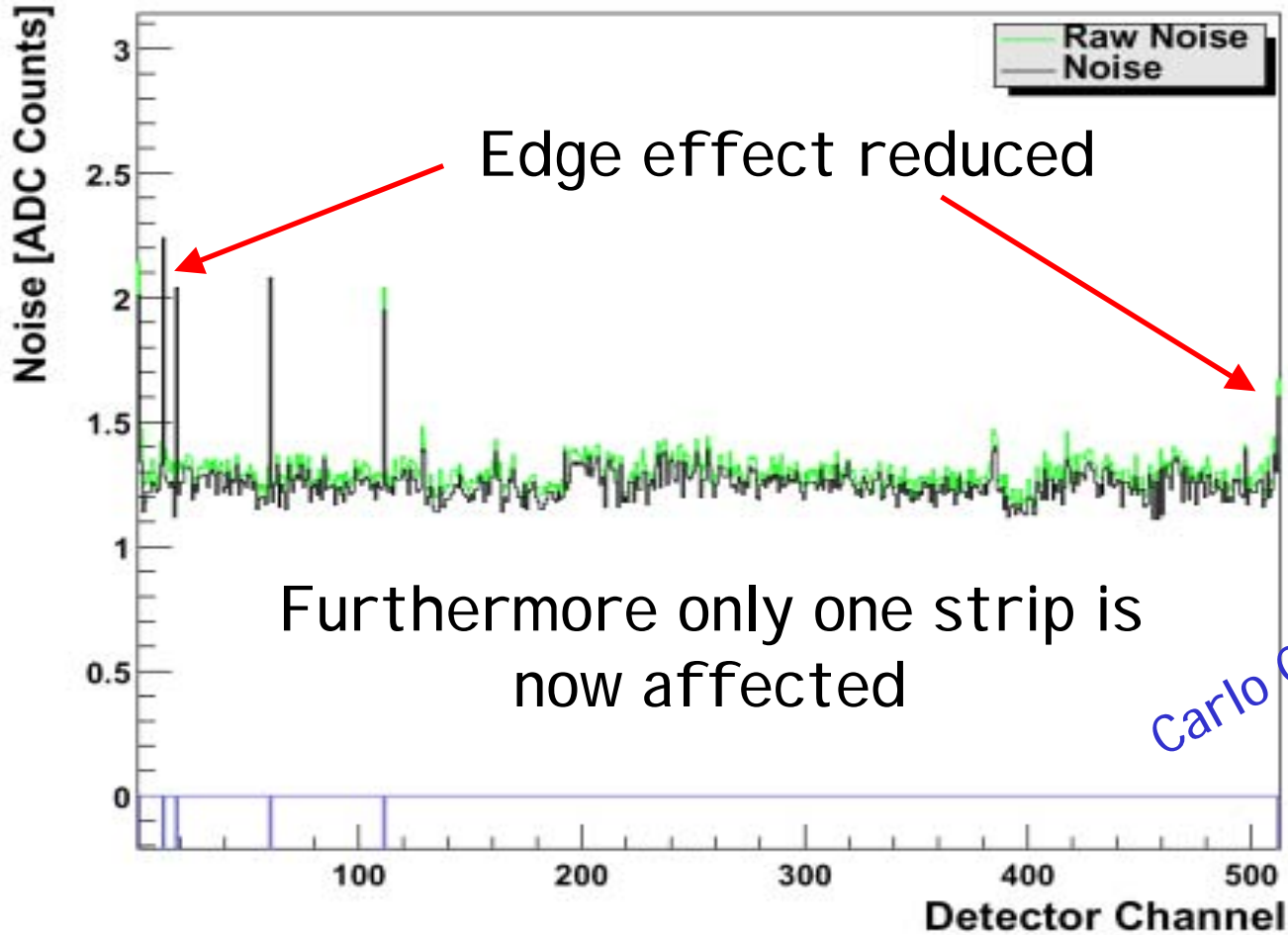
More realistic scenario

(~proposal for better HV filtering on TIB modules)



Same module as before but with 50nF capacitor to ground

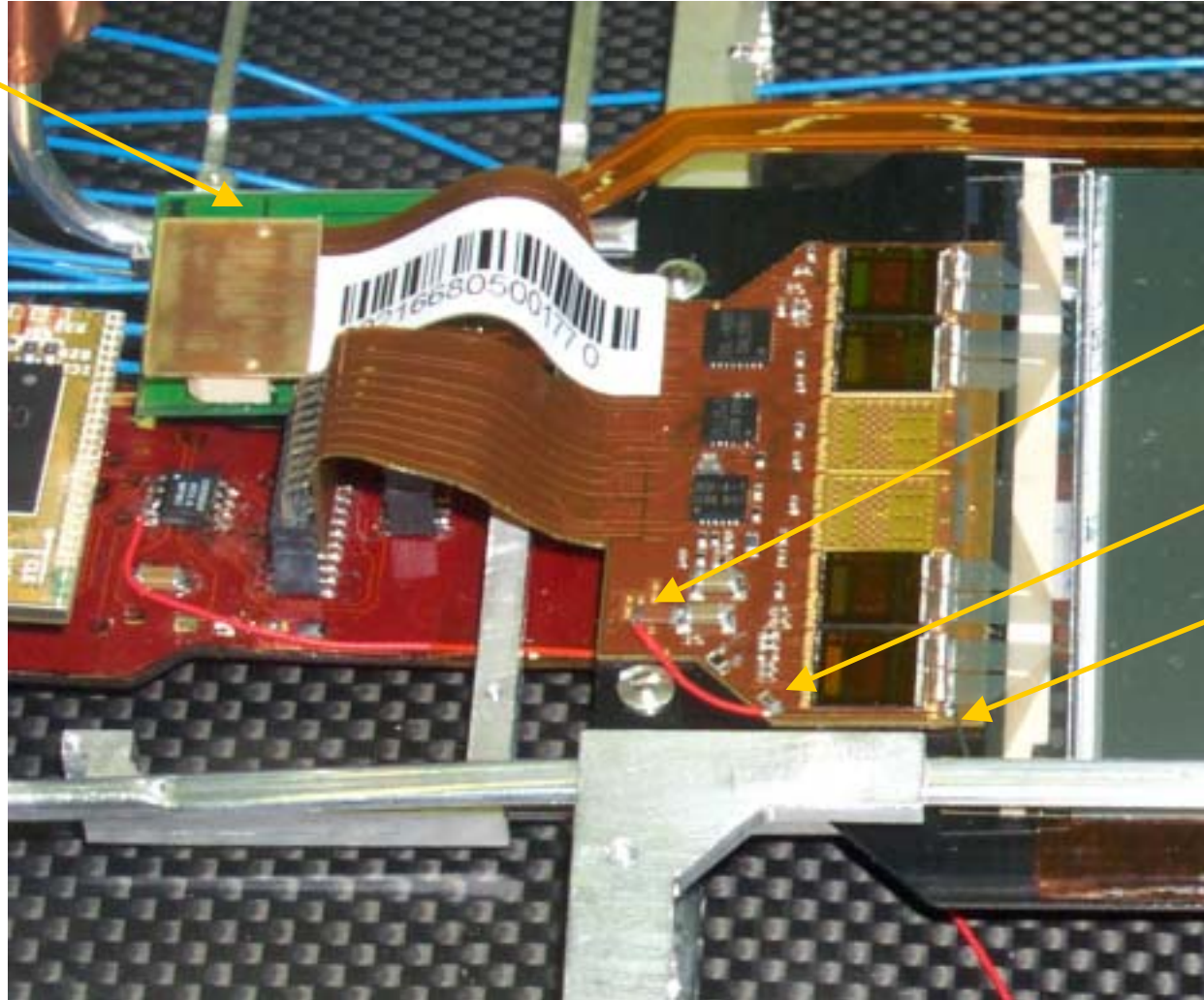
Settings:
Events= 1000
CalculationMethod= n
RMSmin= 0.0
RMSmax= 5.0
TBad= 5.0
TSkip= 4.0
PSkip= 1.0
APVMode= Peak
Inverter= Ion
Bad Channel:
1 12 18 60
111 512



...also the common mode is (slightly) reduced

Picture from TIB System test in Florence

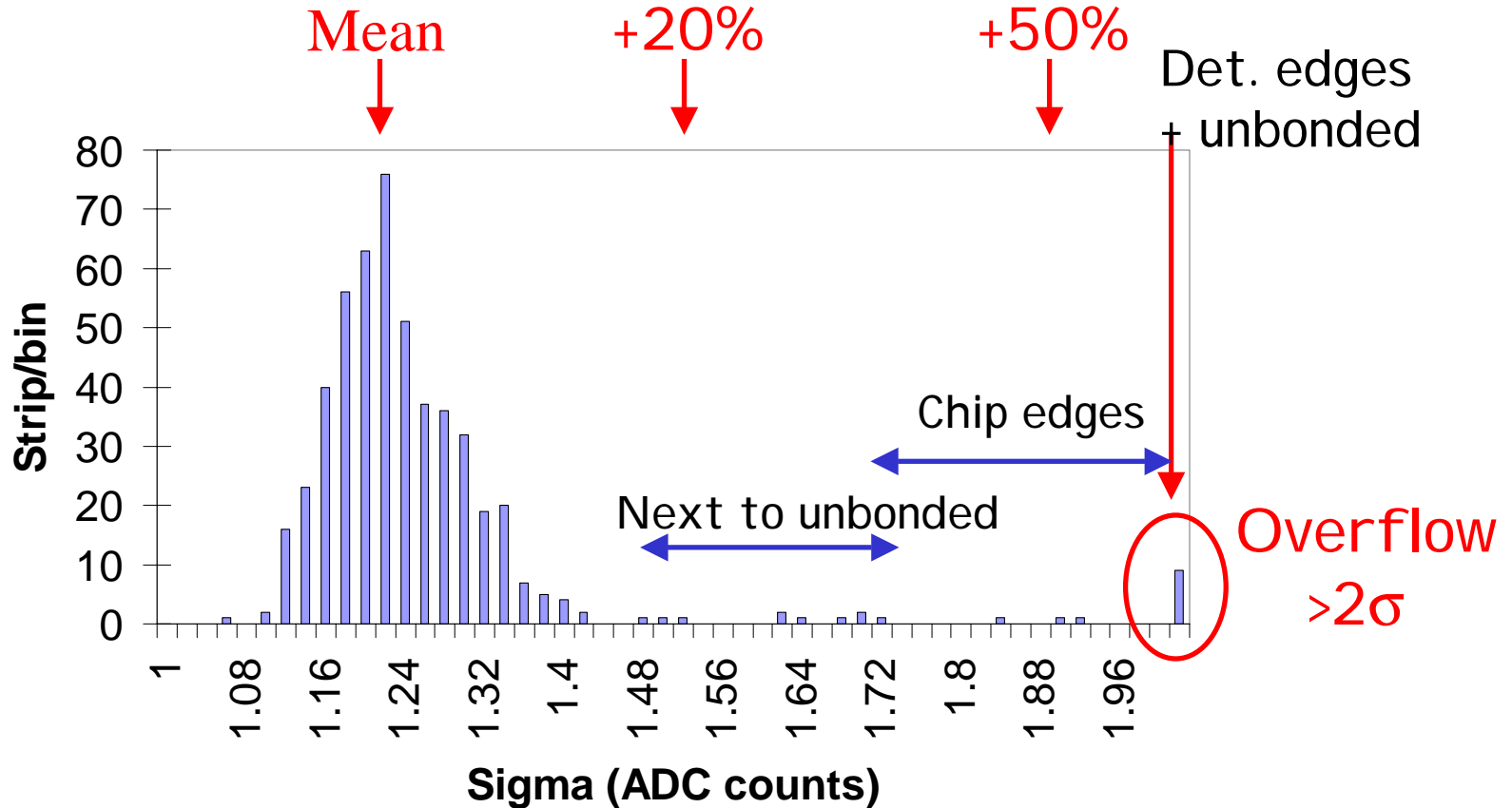
Analog opto
hybrid



Noise distribution

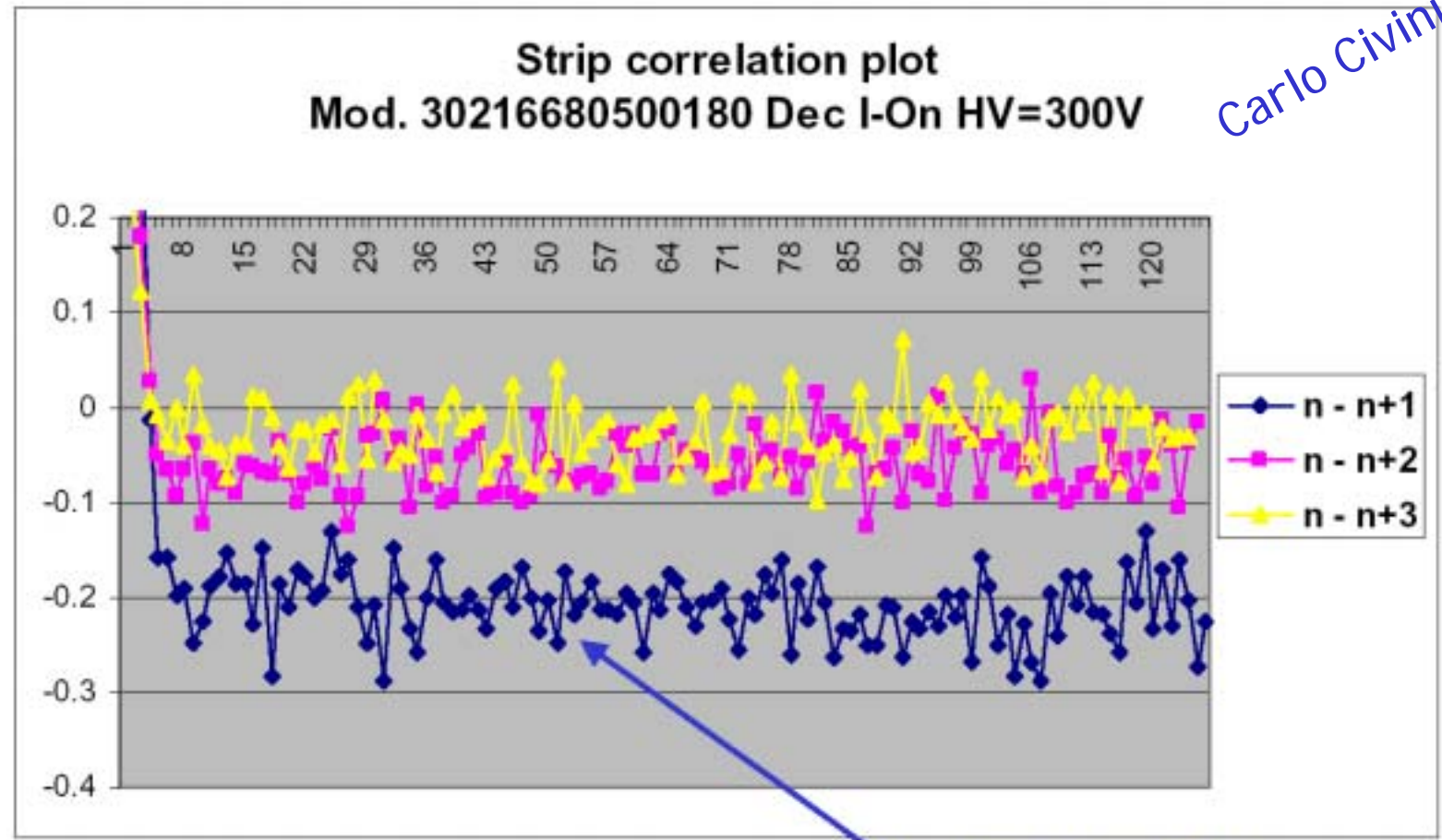
Carlo Cividini

30216680500177 PK-InOn 300V bias



(Anti-)correlated noise

Carlo Civinini



First neighbour
Correlation ~ -20%

UCSB SOS (T. Affolder slide)

We need full complement of test equipment

- ARC (1 of 3)
- DAQ (0 of 2)
- Vienna Cold Box
- Rod Testing Equipment
- Rod Burn-in Electronics

We're about to begin production without requisite testing equipment or experience with systems!!!!