# Status of the 10.000 channels Altro system

Leif Jönsson

10.000 channels = 78 front end cards

| | | |
|---|---|---|
| Naked boards produced: | | 100 boards |
| Mounted boards 20 MHz: | prototype series | 5 boards |
| | first delivery | 20 boards |
| | second delivery | 60 boards |
| Mounted boards 40 MHz | | 10 boards |
| ⇒In total | | 95 boards |

These, however, include the 6 that are going to Japan

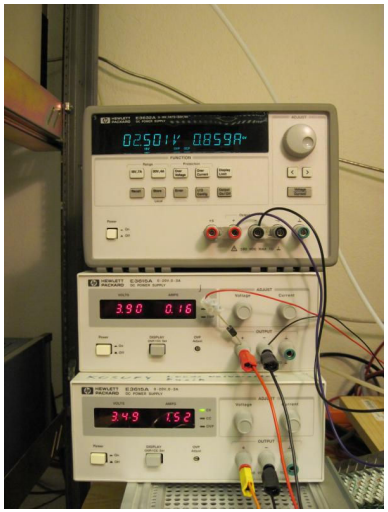
There is an interest from outside institutes to receive either FEC's or PCA16 chips.

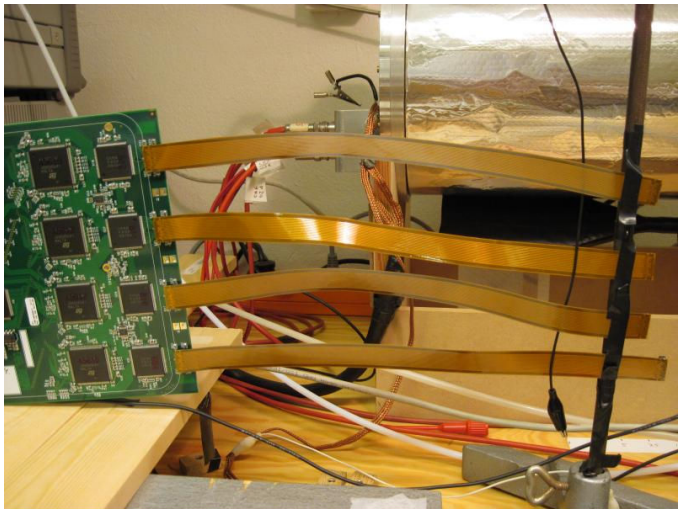
# Tests of the FEC's

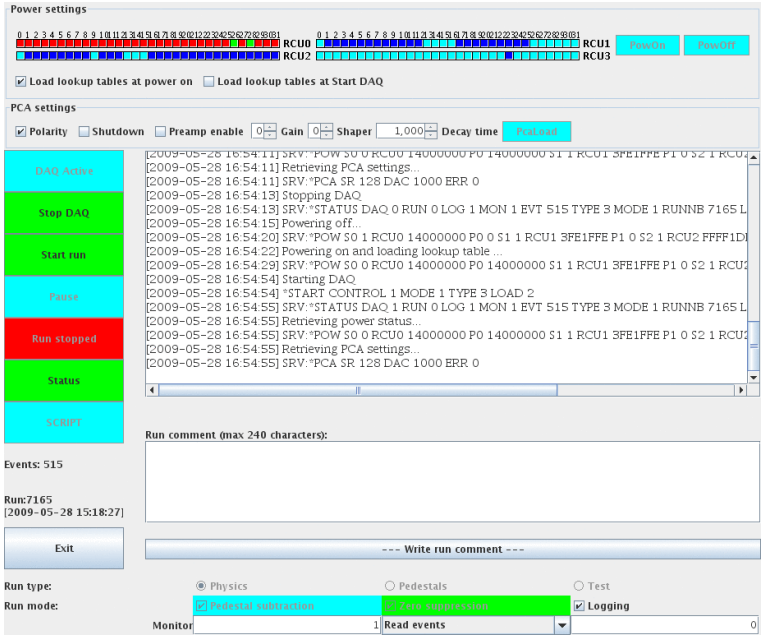
Every board is tested in the following way:

- Check that the currents are correct
- Perform a test of the registers in the Altro by feeding in different numbers and reading them back to check that they remain the same
- Perform pedestal runs for all parameter settings of the PCA16 and check that the pedestal and noise levels are within limits
- Inject charge by pulsing a wire which is applied across the signal cables (kapton cables)

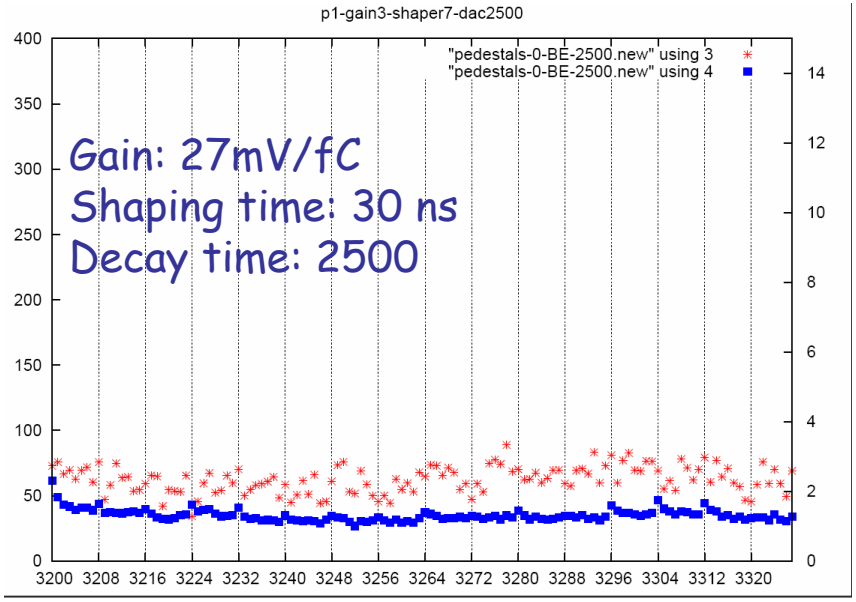
# Some picture of the test set up

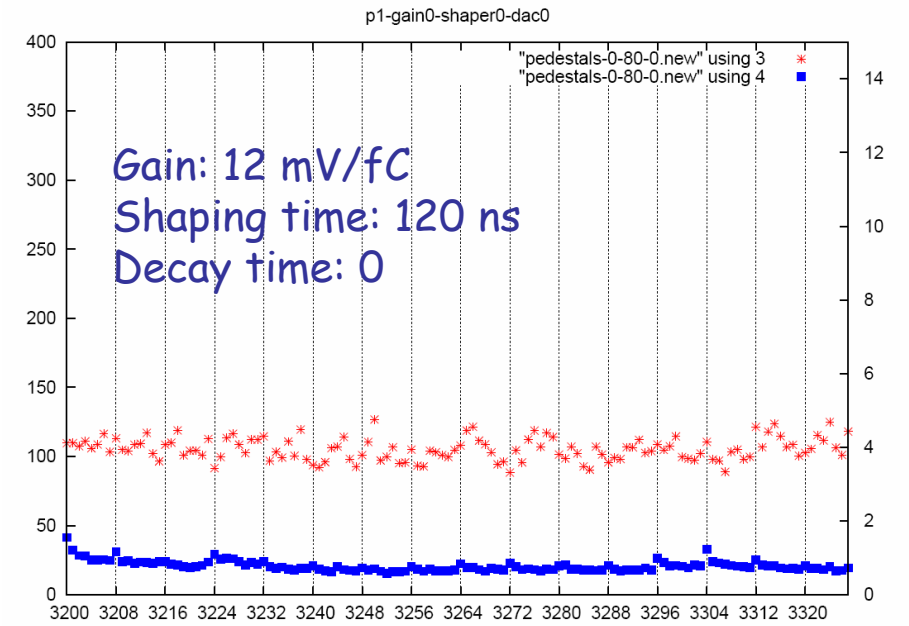


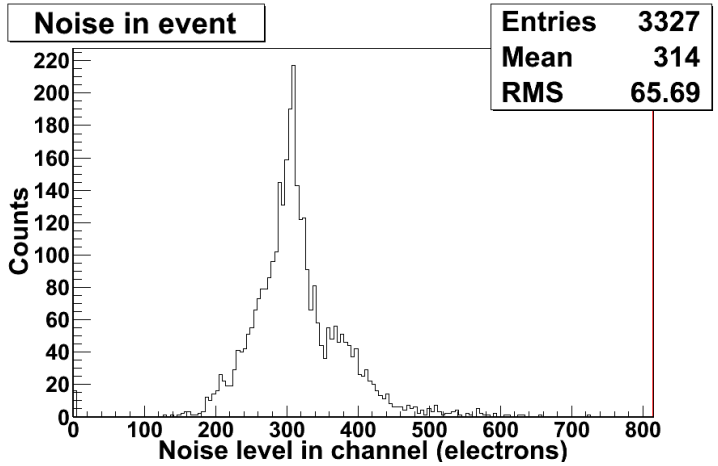




# Typical pedestal runs (FEC 26)



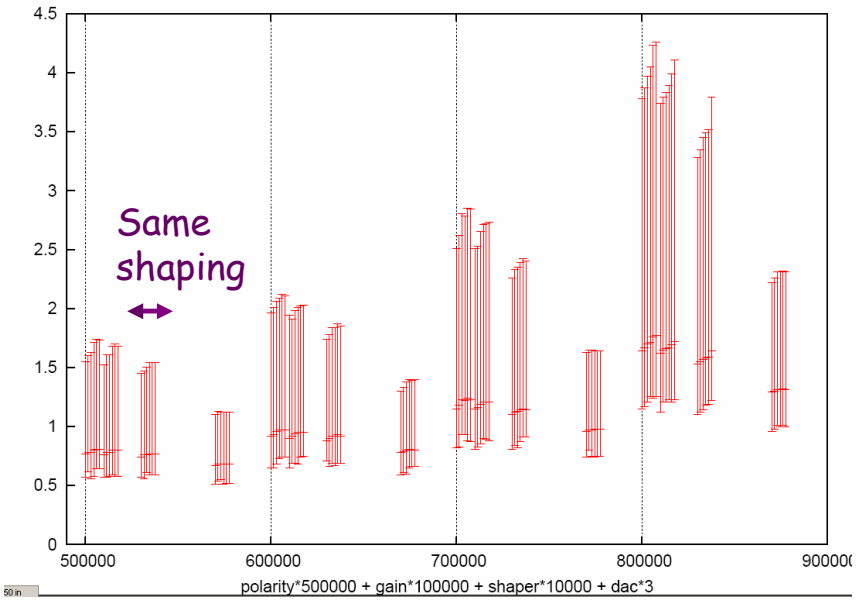

Noise distribution of 3000 channels in the 3 module set-up
with gain 12 mV/fC and shaping time 120 ns

Note: the average noise is 314 electrons

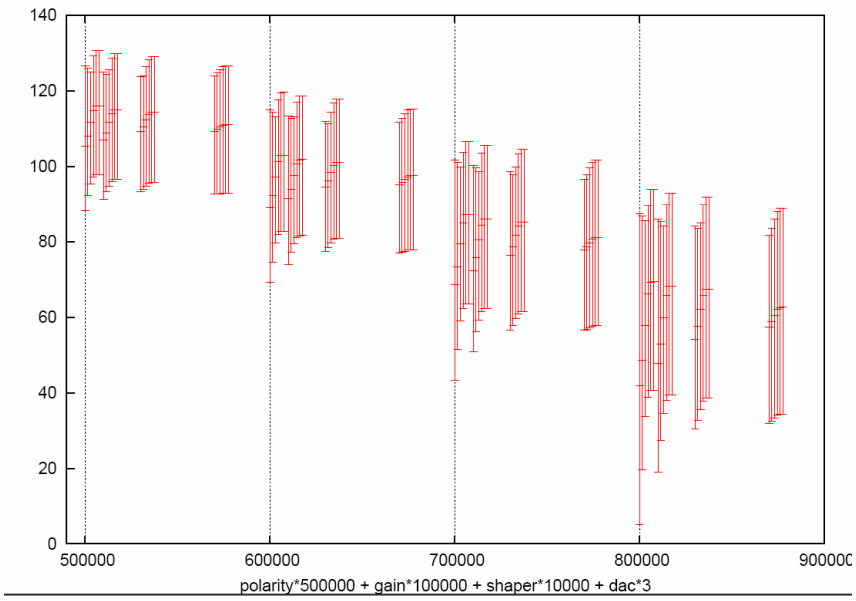
# Summary of pedestal and noise (FEC 26)

polarity·50000 + gain·10000 + shaper·1000 + dac·3

noise




pedestals




Same gain

Same polarity

# Status of FEC tests

Tested so far: 5 from the prototype series
20 from the first delviery
29 from the second delivery

⇒ In total: 54 FEC's

Remain to be tested: 31 from the second delivery
10 with 40 MHz Altro

The tests of the FEC's with 40 MHz Altro's will be done at 20 MHz to start with
For tests at 40 MHz a 40 MHz sampling clock is needed in the RCU (firmware)

# Future plans

- Perform tests with 10.000 channels

$\Rightarrow$ bring the FEC crate + FEC's + RCU + computers to Lund

- Every RCU can take 32 FEC's

$\Rightarrow$ 3-4 RCU's are needed depending on how the FEC's are distributed

- The DAQ system is prepared to run with 10.000 channels but has to be tested
- Temperatur sensors for the FEC's have to be developed
- A new cooling system has to be designed
- In addition to the tests described above, also Altro memory tests will be performed
- Get the distribution box running (Brussels), since this is needed to in order to operate the TPC together with the pixel detector