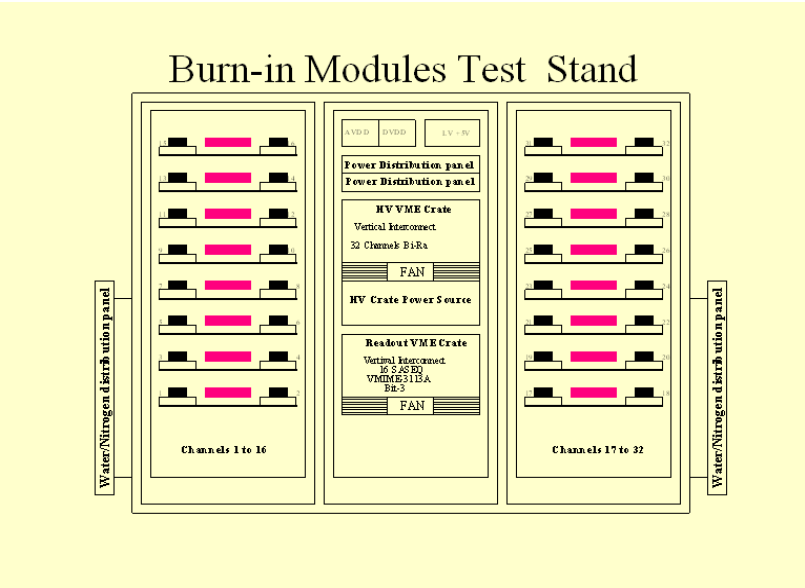
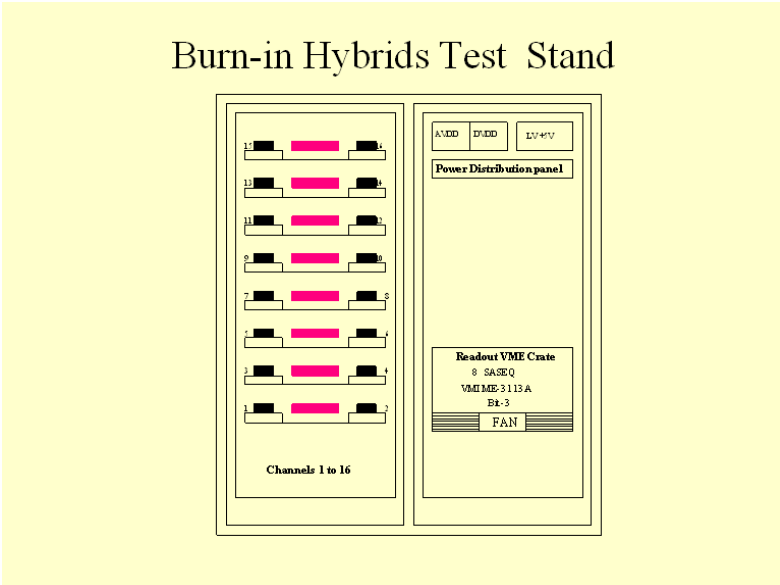
Burn-in Software Status

Silicon Electronics Meeting
May 19, 2003

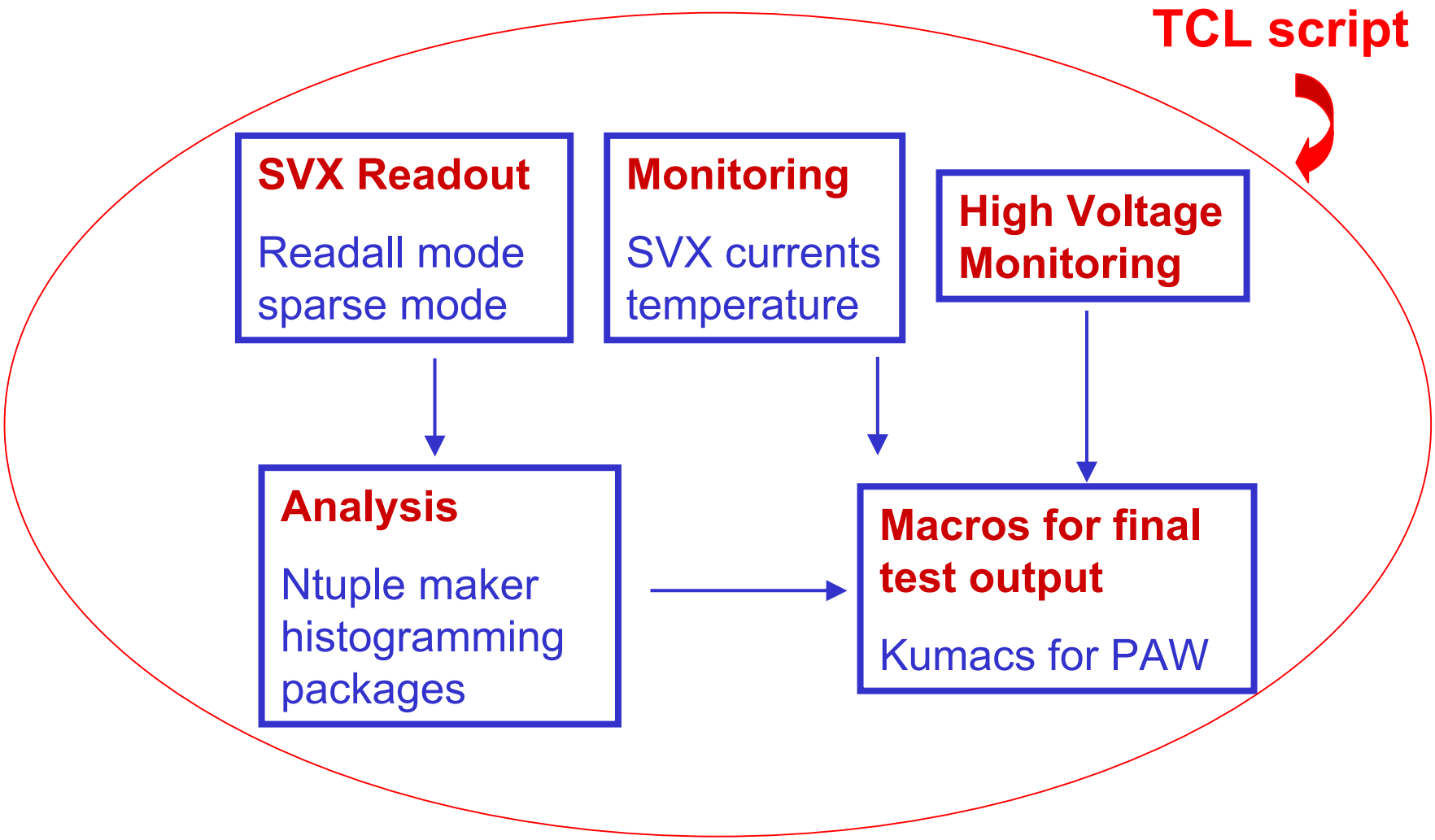
Hardware

- Except from the Purple Cards all hardware is ready (thanks to Sasha L.)
  - 2 hybrid burn-in stations (16 channels each)
  - 2 module burn-in stations (32 channels each)





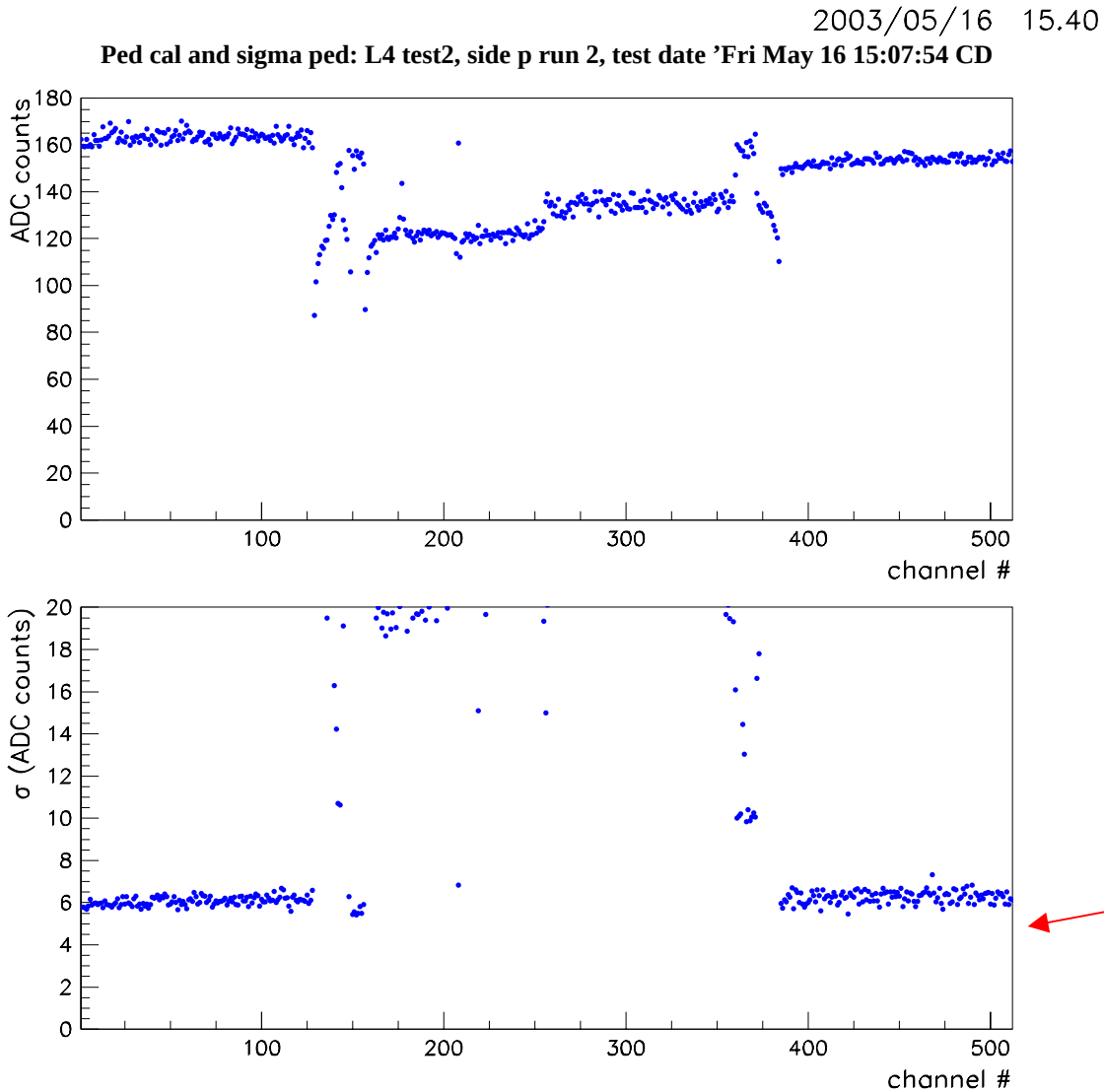
Burn-in Ingredients



Software Status and Details

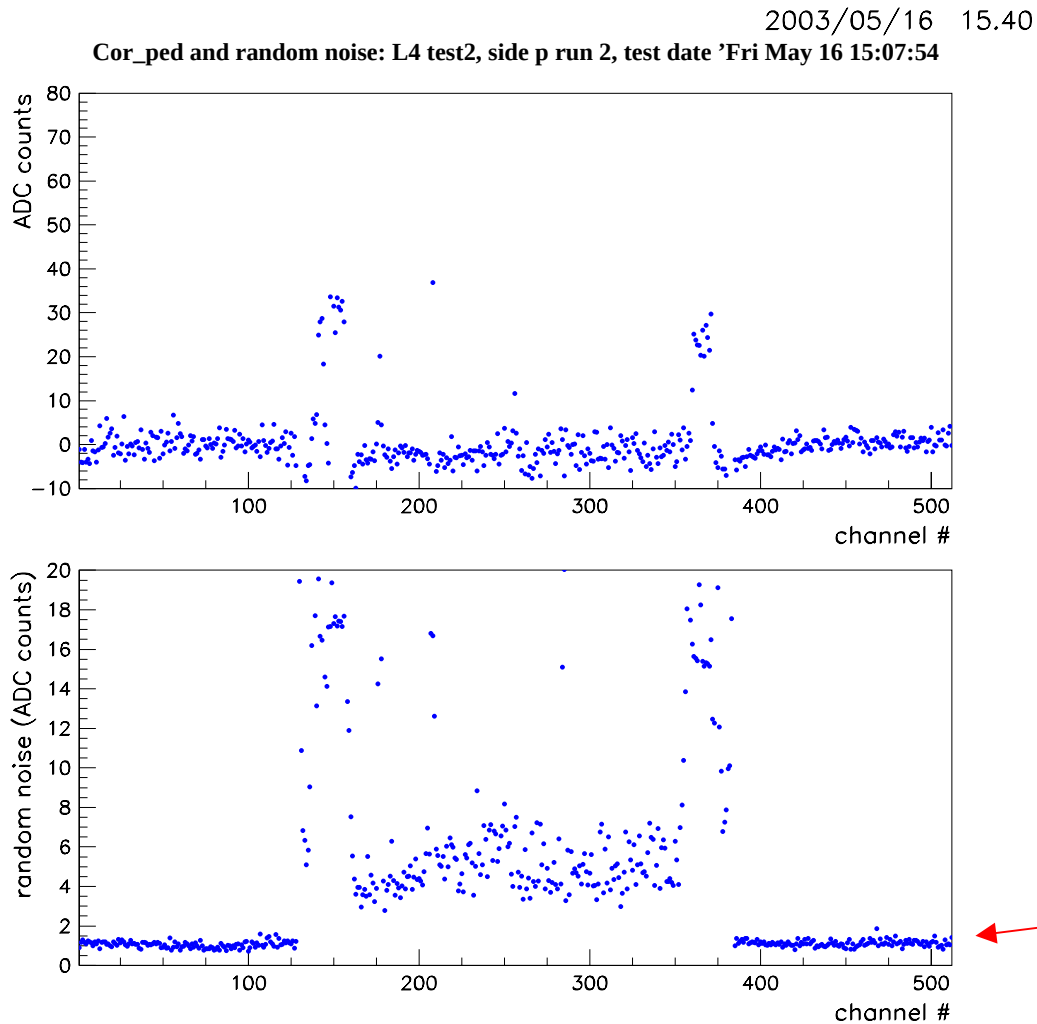
- **TCL script**
  - Runs for 4 chip hybrid
  - Tested for one SASEQ
  - Needs to be extended for 6 and 10 chips (create download files etc)
  - Test for multiple SASEQs
- **Macros**
  - Modified and tested for 4 chip hybrid
- **HV readout**
  - No modifications expected
  - Needs to be tested
- **SVX readout software**
  - Codes were modified to be able to deal with wrong chip ID in the current version of the chip
  - Now works for read all mode
  - More modifications are needed for sparse mode
- **Monitoring**
  - No modifications expected
  - Needs to be tested

Pedestal and Noise in Cal. Inject Mode



Total noise (no sensors)

Pedestal and Noise in Cal. Inject Mode

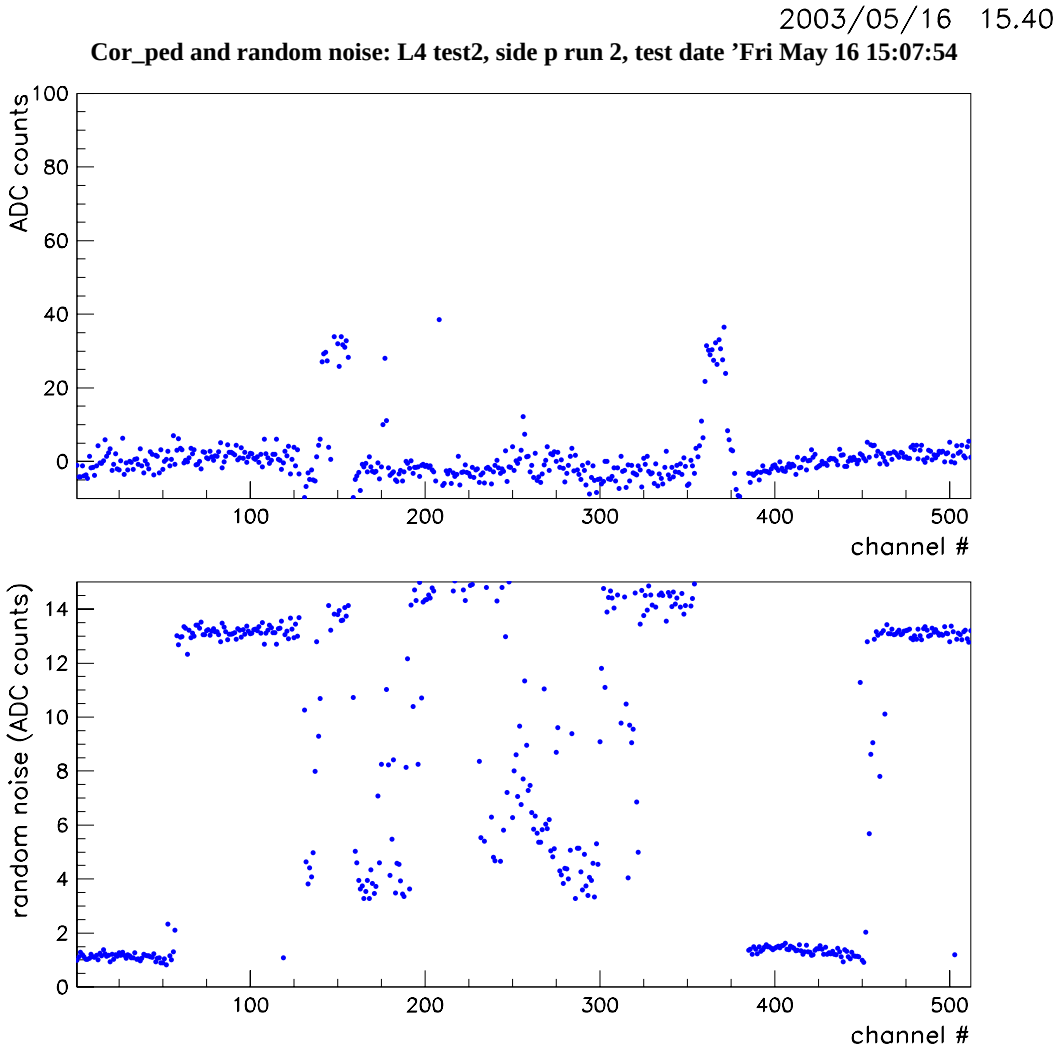


Corrected pedestal:

$$p_i^{cor} = p_i - \bar{p}_{chip}$$

Random noise looks good for hybrid:

Pedestal and Noise in Data Mode

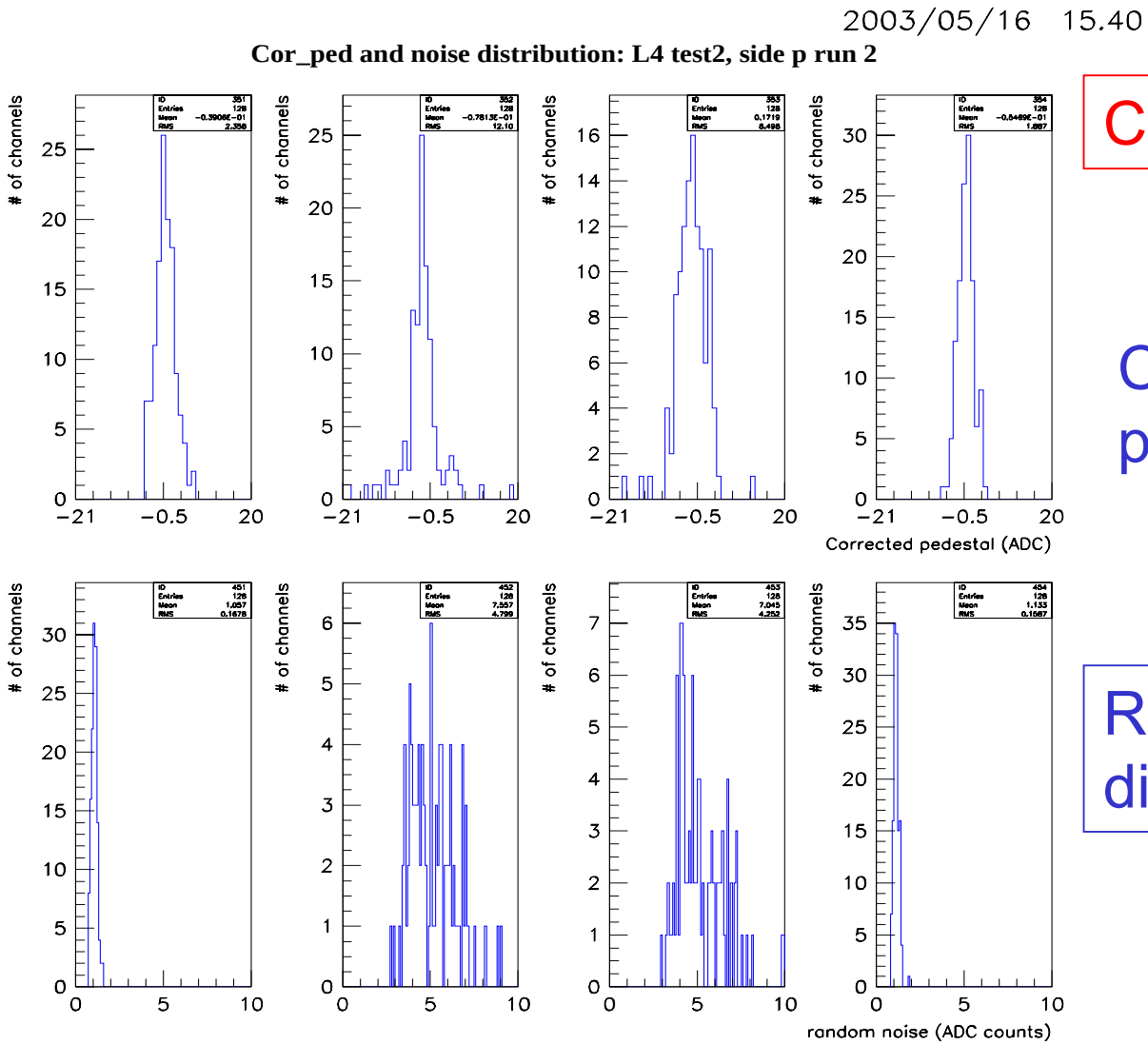


Corrected pedestal

Random noise for hybrid

need to investigate

Pedestal and Noise Distributions



Cal. Inject mode

Corrected pedestal

Random noise distributions

Analysis Software: Present and Future

- Current
  - Ntuple maker (newdaq)
  - Fortran based histogramming
  - PAW macros
  - Current analysis software has been tested and works for 4 chip hybrid BUT…
- Proposed modification
  - Switch to root-tuples
  - HepTuples for histogramming
  - Root macros for final analysis/plots
- New development should go in parallel with the running current version

Example of Output Proposal

summary_example - WordPad

File Edit View Insert Format Help

```
-- Chip 0 --
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              00000000001111111111222222222233333333334444444444555555555556666
              01234567890123456789012345678901234567890123456789012345678901234
Ped Stat      ..................................................................
Noise Stat    NT....O.........................................P....N..........
Gain Stat     ......O.........................................P....O..........
Pinhole Stat  ..................................................................
PulseH Stat   JK...............................................JK...K..........
              ------------------------------------------------------------------
Summary Stat  ??    O                                          ?    ?

              00000000000000000000000000000000000001111111111111111111111111111
              66666677777777778888888888999999999900000000000111111111122222222
              45678901234567890123456789012345678901234567890123456789012345678
Ped Stat      ..................................................................
Noise Stat    ............PP.......................................................T
Gain Stat     ............PP............T.....................................
Pinhole Stat  ..................................................................
PulseH Stat   ............JJ...........KKK....................................
              ------------------------------------------------------------------
Summary Stat              ??            ?                                      ?

Totals:
     Failed pedestal    0
        Failed noise    8
         Failed gain    6
      Failed pinhole    0
  Failed pulseheight   10
```

For Help, press F1

Start | C:\WINNT\S... | Microsoft Po... | talks | summary_... | EN | 18:52

Summary and Plans

- Burn-in runs in readall mode for 4 chip hybrid
  - Pedestal and noise are reasonable
  - Gain is zero – requires investigation
- Short term “to do”
  - Test for all types (4, 6 and 10 chips)
  - Extend to 8 (16) SASEQs
  - Add LV monitoring
  - Add HV monitoring
  - Add sparse mode
- Long term
  - Rewrite analysis package
  - Create output with full diagnostics of faults: noisy, dead, disconnected channels