# FD LI Drift Calibration

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- Status of data processing

  Problems, features

- Progress(?) with drift corrections

N.B. So far I have generally been learning about LI system / Calibrator / already-known-problems etc.....

# Status of Data Processing

- Took over responsibility for FD data processing from Simona in July

  Combine raw LI summaries $\rightarrow$ PULSERDIFT, PULSERGAIN (and corresponding PIN) database tables

- Problems with PULSERDIFT table when row_counter added

  Eventually resolved

  PULSERDRIFT table is so large almost unusable - need long-term plan

- Data processed so far:

  2003 September–October

  2004 January, March–December

  2005 January–August

- Still to process

  2003 August, November–December

  2004 February (now half done)

# Status of Data Processing

- Tried to check for missing data in PULSERDRIFT by counting rows/day
- Turned up various problems/features:
  - Bug in offline code such that if DAQ run ended between two leds the last led was not written to the database

    Occurs ∼once a week

    Fixed by Tingjun/Robert
  - Data from special LI runs gets processed into the database as normal drift/gain data – do we want this?
  - September 2003 data have gone missing..... still investigating
  - Otherwise missing data seem to correspond to known hardware/software/DAQ problems

# Drift Corrections

- Started to make PulserDriftCalScheme work to compare with Nathaniel's PmtDriftCalScheme

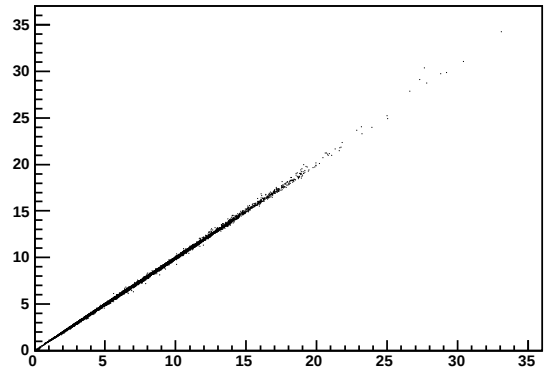
$$ADC_{cor} = ADC_{uncor} * \frac{ADC(0)}{PIN(0)} * \frac{PIN(t)}{ADC(t)}$$

- Have filled temporary PULSERXSCALE (and PULSERPINSCALE) table with data from June 2005 gain curve
  - $\mathrm{xscale} = \frac{ADC(0)}{PIN(0)}$
  - From slope of fit to PMT vs PIN at low ADC using high-gain pin
- Fixed problem with inversion of high/low-gain pins in PulserDriftCalScheme code
- But first started with a bad channel....

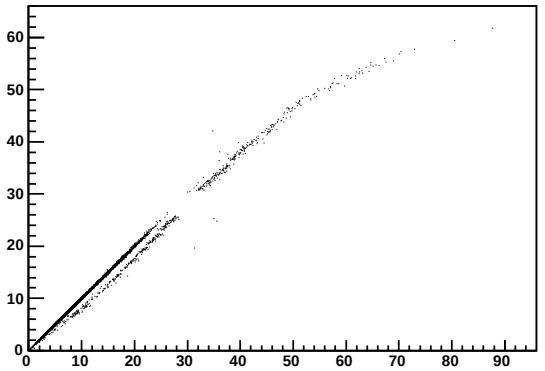
# Drift Corrections

- Check xscale values reasonable by comparing with $\frac{ADC}{PIN}$ from drift run taken at same time as gain curve
- Problems with some boxes/leds...

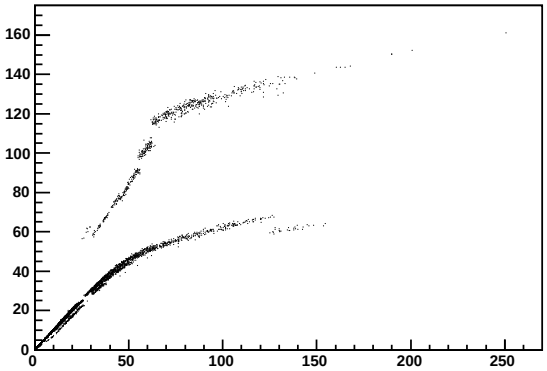
xscale:mean/pinmean {xscale>-9999&&pb==0}



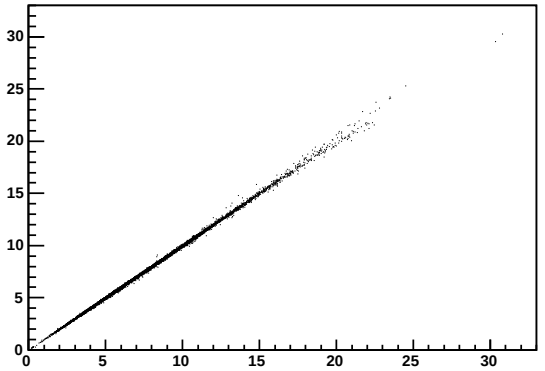

xscale:mean/pinmean {xscale>-9999&&pb==2}




xscale:mean/pinmean {xscale>-9999&&pb==9}

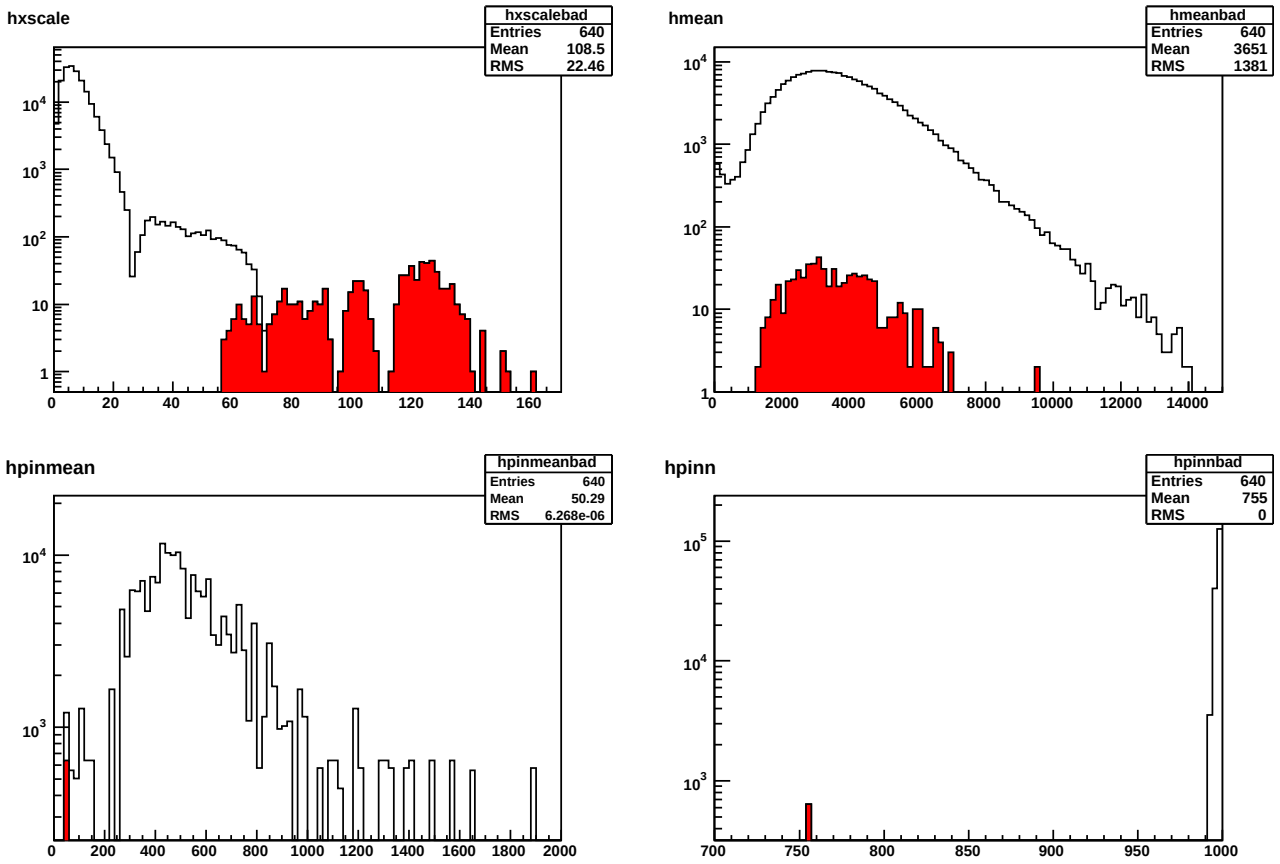



xscale:mean/pinmean {xscale>-9999&&pb==15}



# Drift Corrections

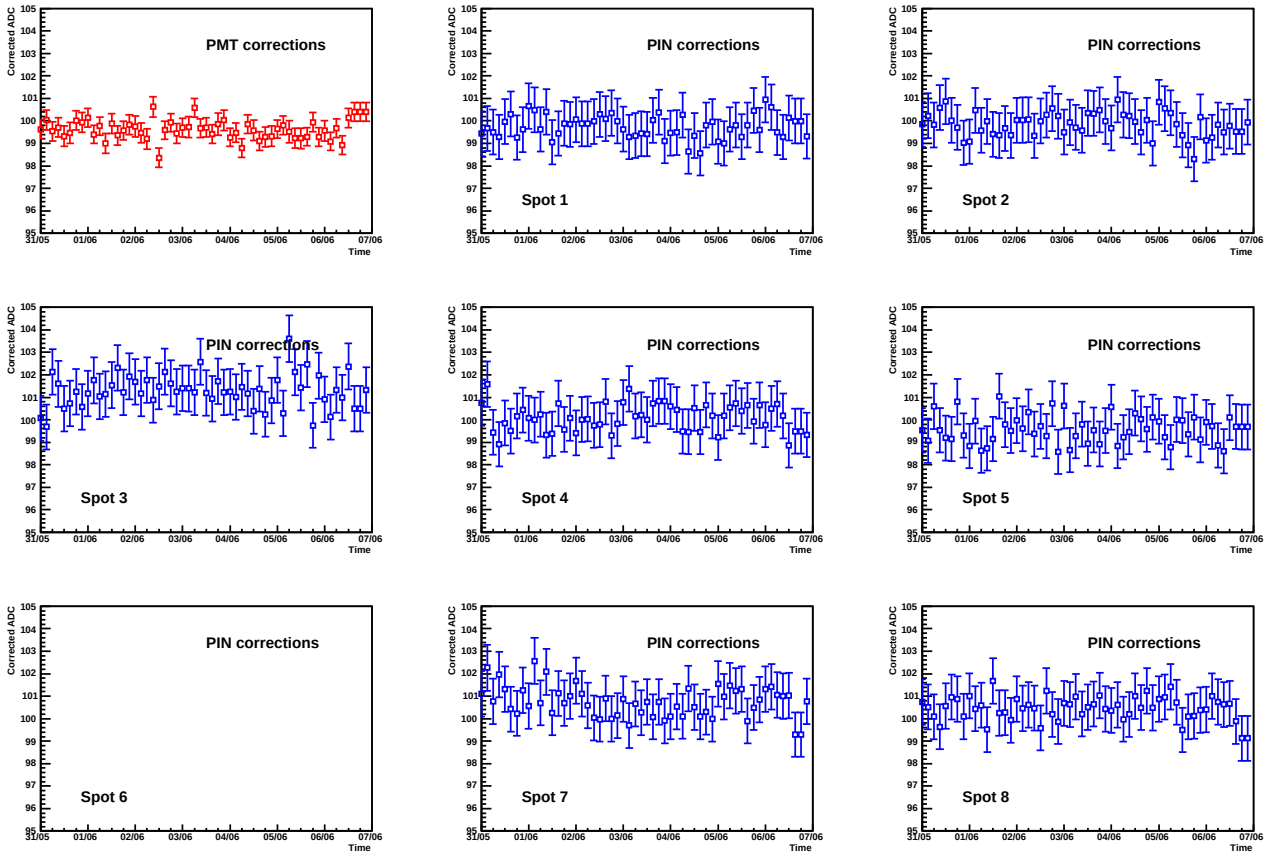
- Found ∼dead PIN for PB9 led 7 (red histograms)



# Drift Corrections

- Plot drift-corrected values for input ADC=100 for 1 week beginning June 1st 2005 for several spots on one pixel (with good pin)

  N.B. Errors not yet calculated, arbitrarily set to 10 counts



# Drift Corrections

- This is as far as I have got....
- I have learnt a lot, but much more to learn
- Gradually getting towards being able to do something useful
- Need to coordinate/plan work