FCAL Commissioning Update

11/04/2014 - 11/07/2014

- About 99% of total live channels
- Monitoring plugin functional
- No major hardware setbacks
- Some issues with very high rates in some channels
- Pedestal stability with beam (ongoing)
- Looking forward

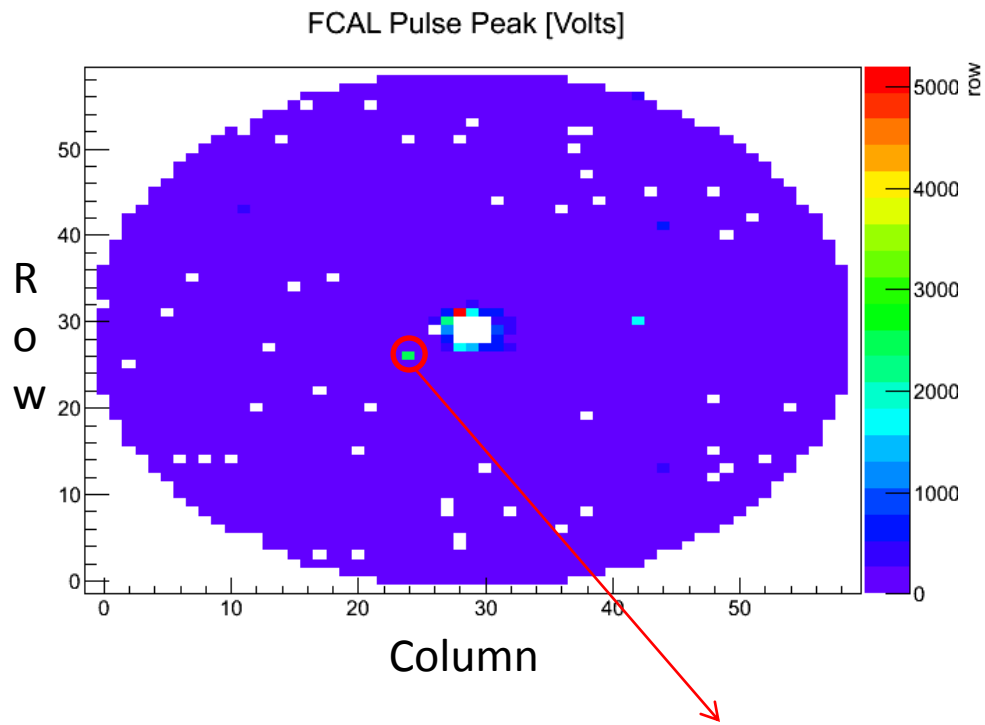
Adesh Subedi

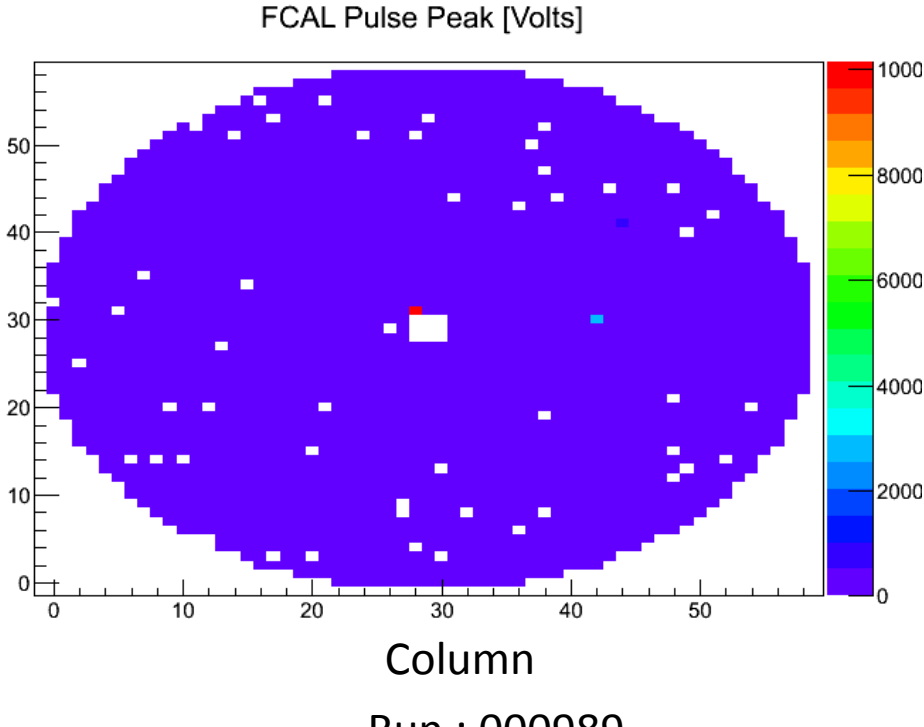
Manuel Lara

Good Runs

- DAC value set to 4000 to mask channels with very high rates (https://logbooks.jlab.org/entry/3304271)
- Runs with beam: 938, 940, 941, 943, 944, 948, 949, 950, 951, 952, 954, 955, 956, 962, 967, 968, 970, 972, 975, 977, 980, 982, 985, 988, 990, 992, 993, 994, 995
- Run with no beam: 989
- Took additional runs with LED pulser to better understand commissioning data

Pulse Height Distribution





Run : 000995
Beam : 220 nA

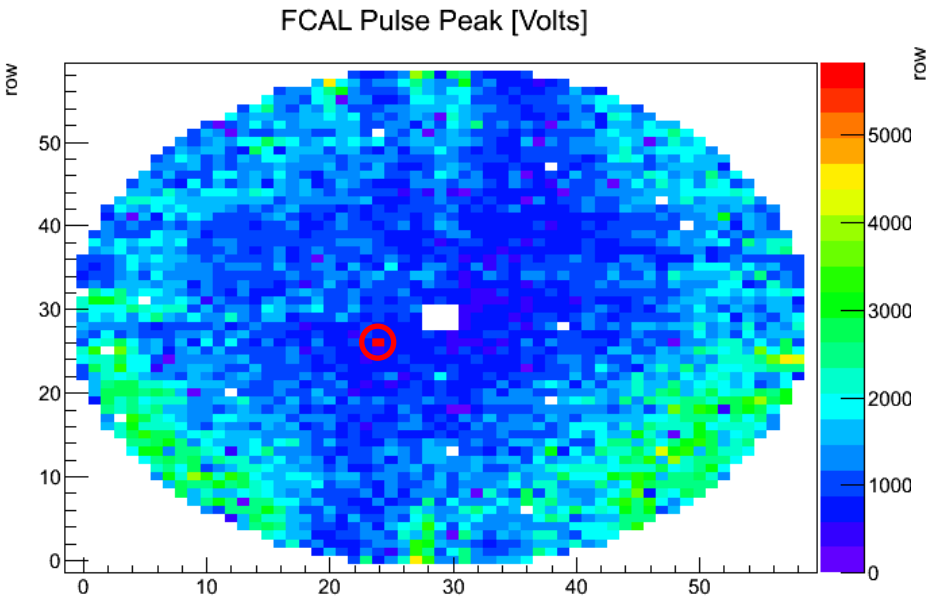
"Hot" channel

Run : 000989
Beam : Off

Some channels registered very large pulses

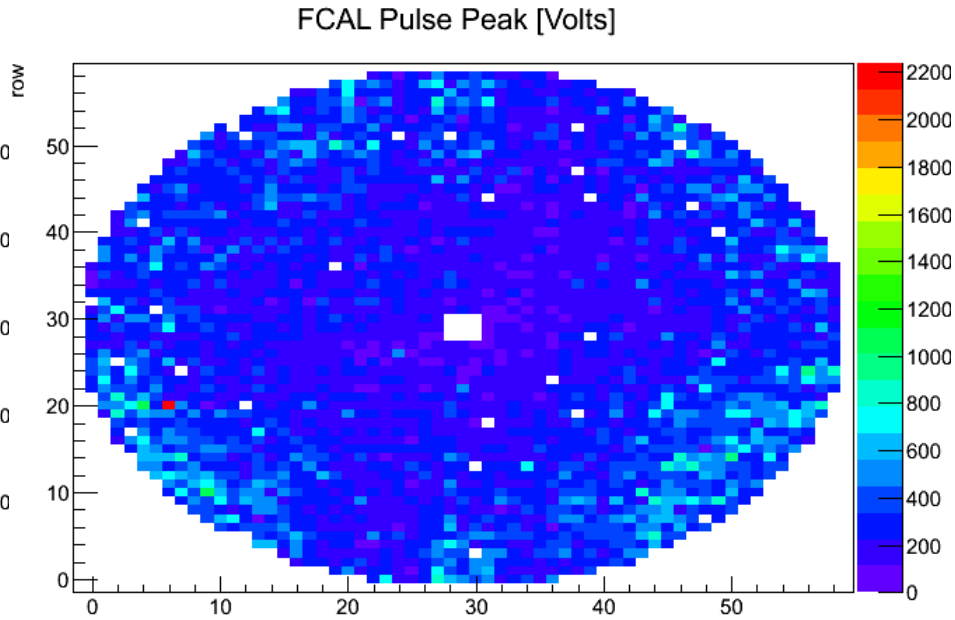
Pulse Height Distribution

LED pulser run with nominal HV



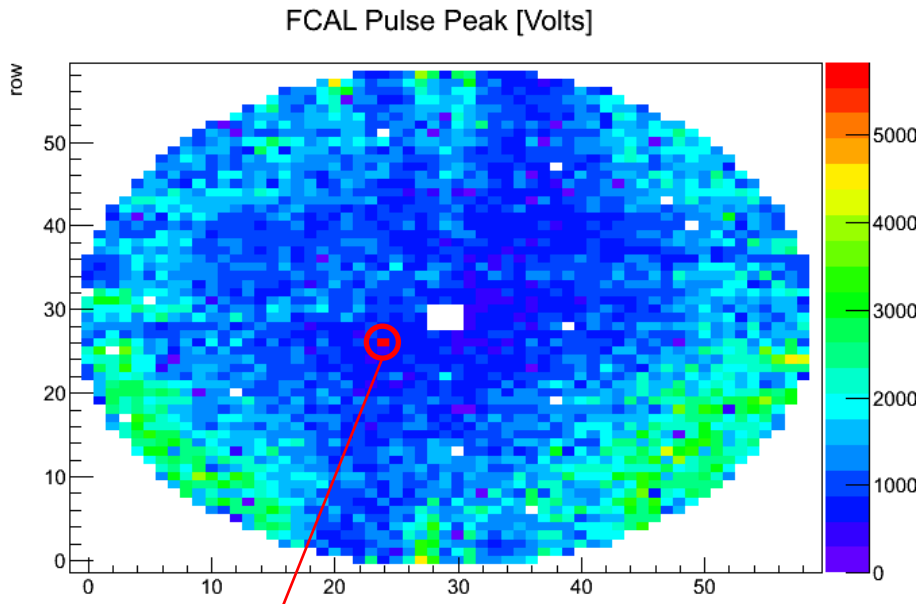
HV = 1598 V

LED pulser run with HV = 1500 V



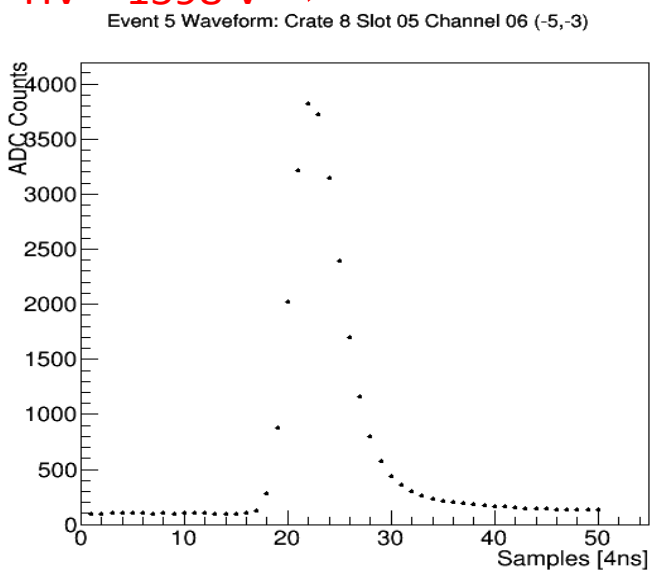
Pulse Height Distribution

LED pulser run with nominal HV

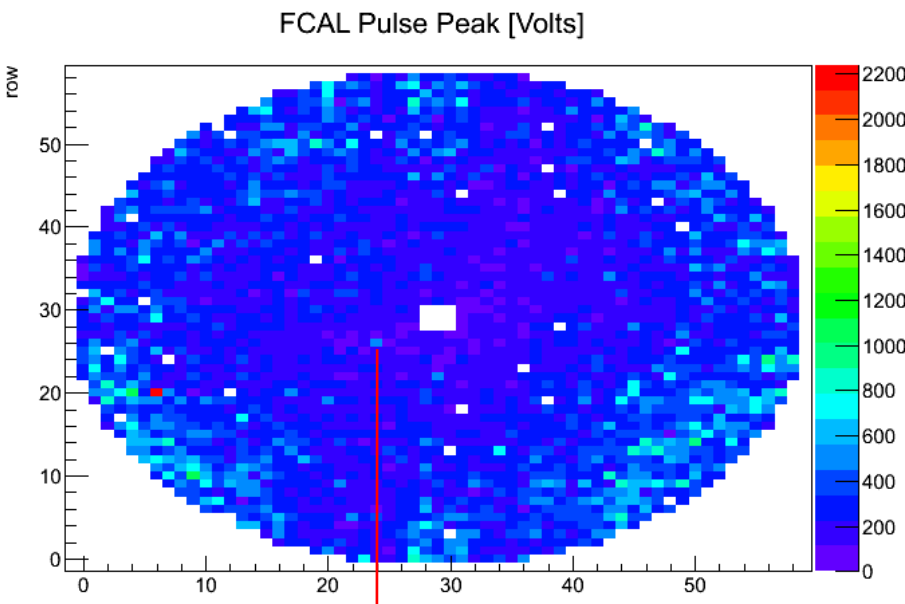


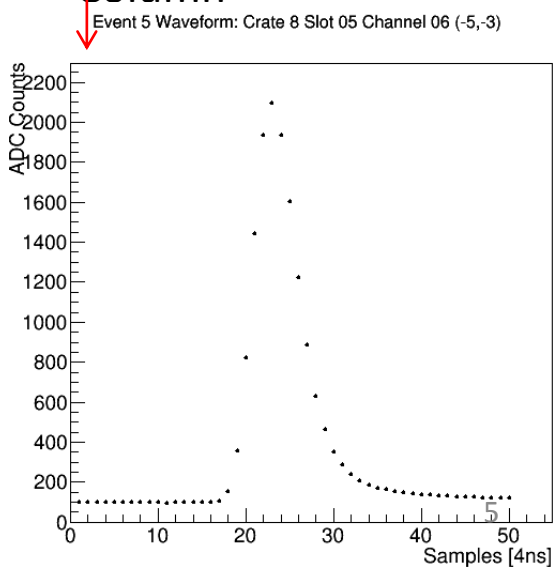
R
o
w

HV = 1598 V



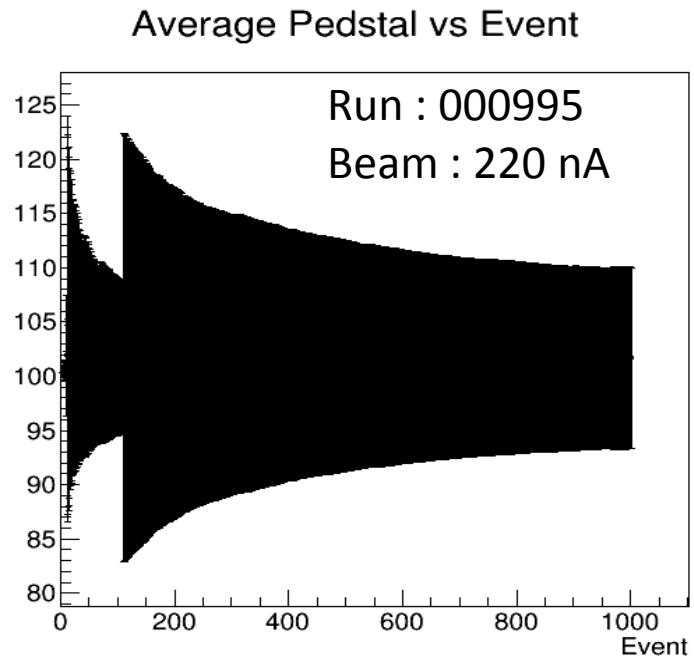
LED pulser run with HV = 1500 V



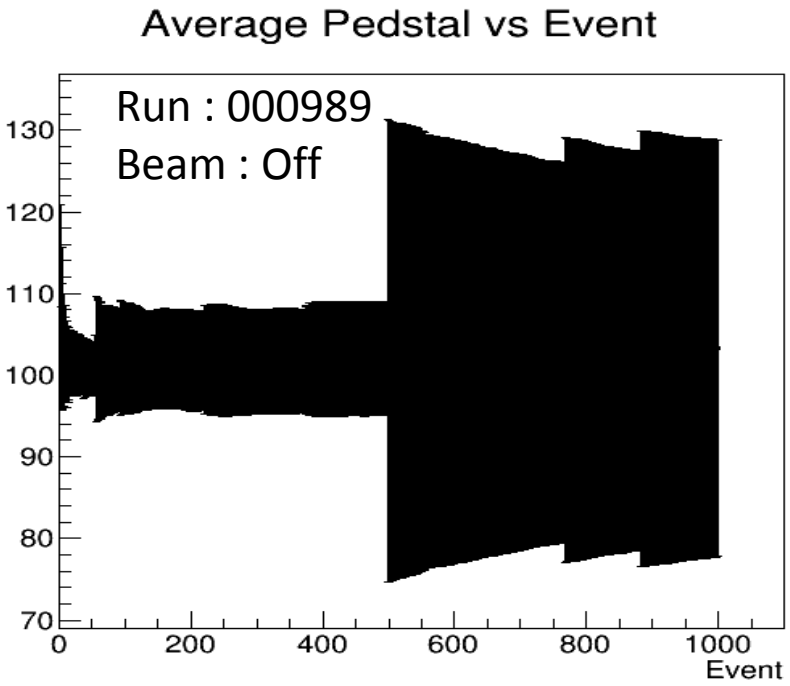


HV setpoint higher for this channel?

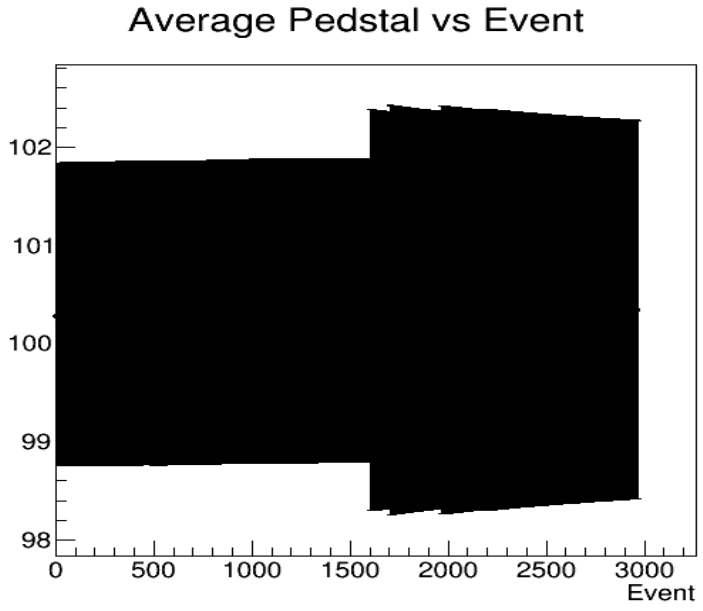
Pedestal Stability



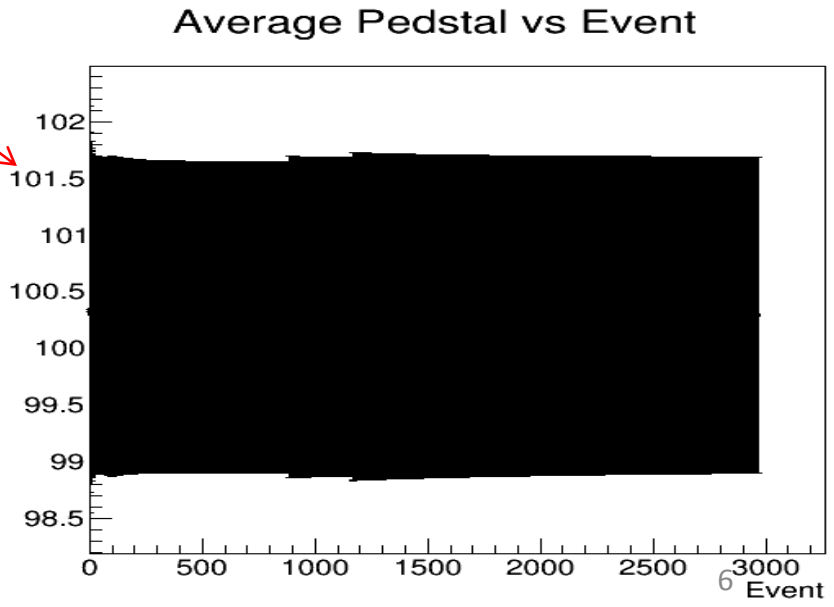
Large fluctuations in beam on/off data



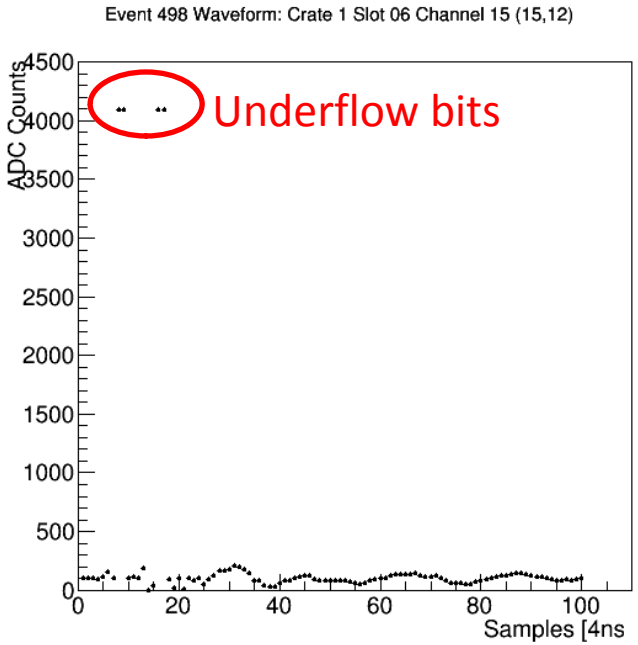
LED pulser data



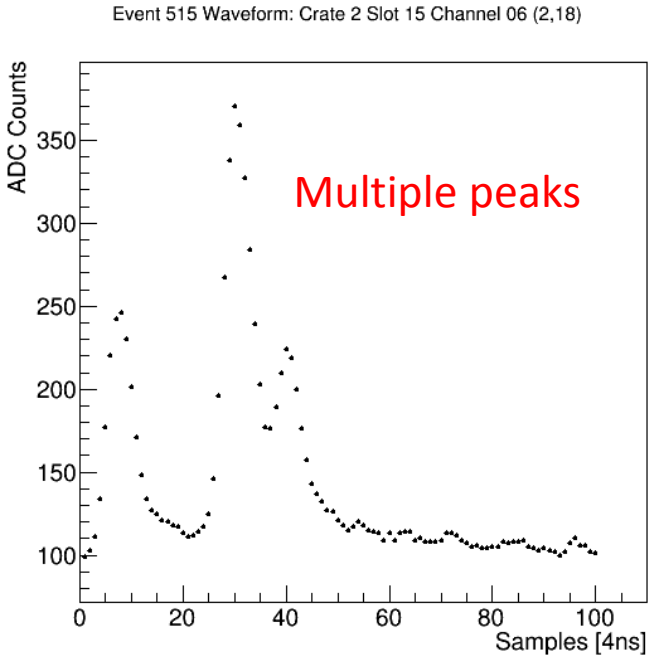
Average pedestal/event is relatively stable in LED pulser data

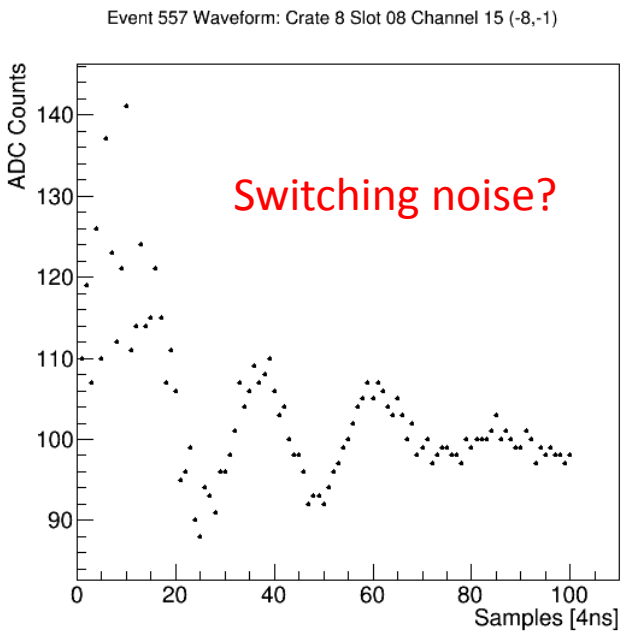


More on Pedestals



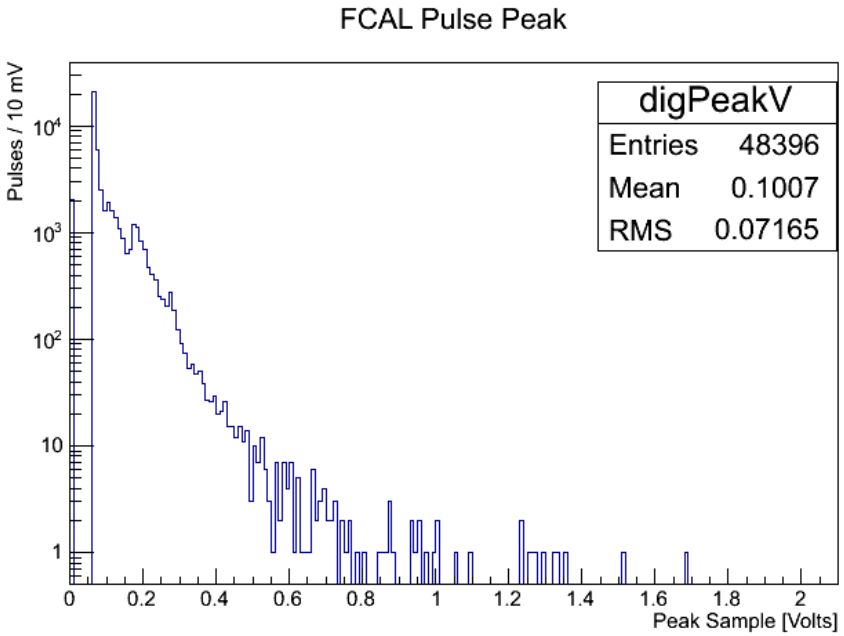
Observed some issues with pedestals





Need to understand and resolve these issues

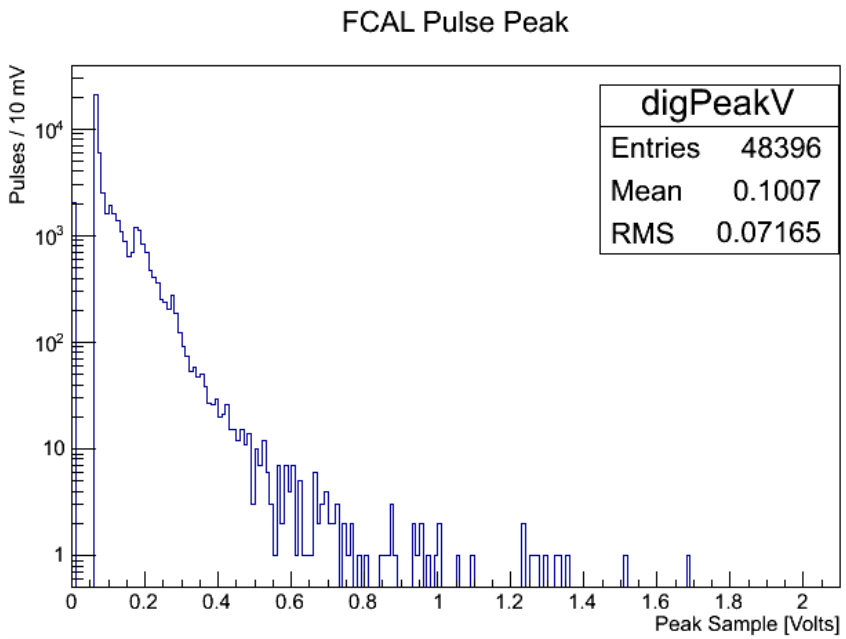
Pulse Peak and HV



Most events have a pulse height around 0.4 Volts or less

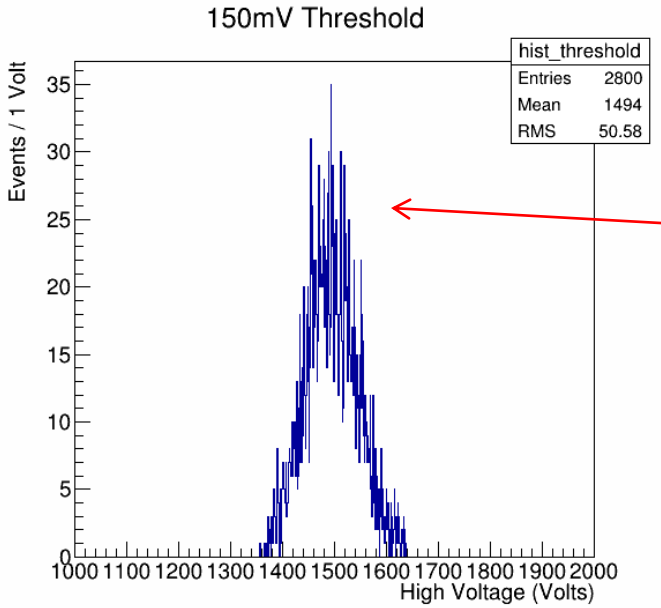
We can raise HVs to have 4x higher pulse peaks (i.e., increase threshold by 4x)

Pulse Peak and HV



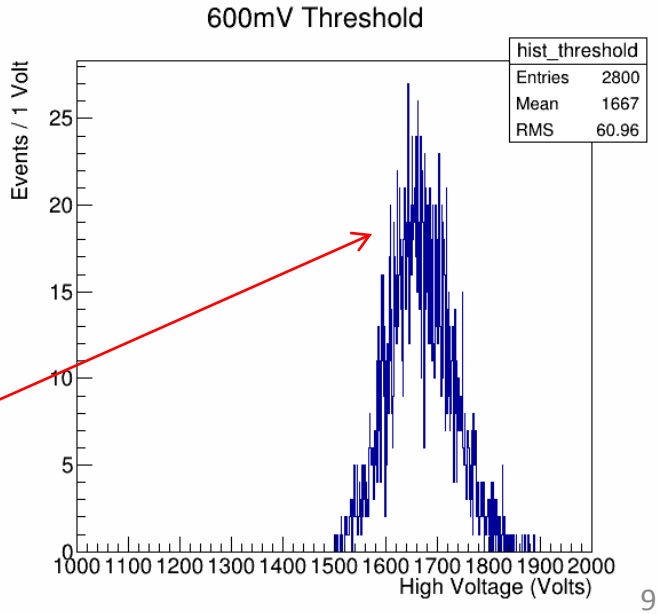
Most events have a pulse height around 0.4 Volts or less

We can raise HVs to have 4x higher pulse peaks (i.e., increase threshold by 4x)



At current (150 mV threshold) HV

At 600 mV threshold



Looking forward

- Work in progress to understand pedestal fluctuations. Increase pedestal threshold?
- Plan to increase HV for all the channels. A test run with cosmics can be helpful