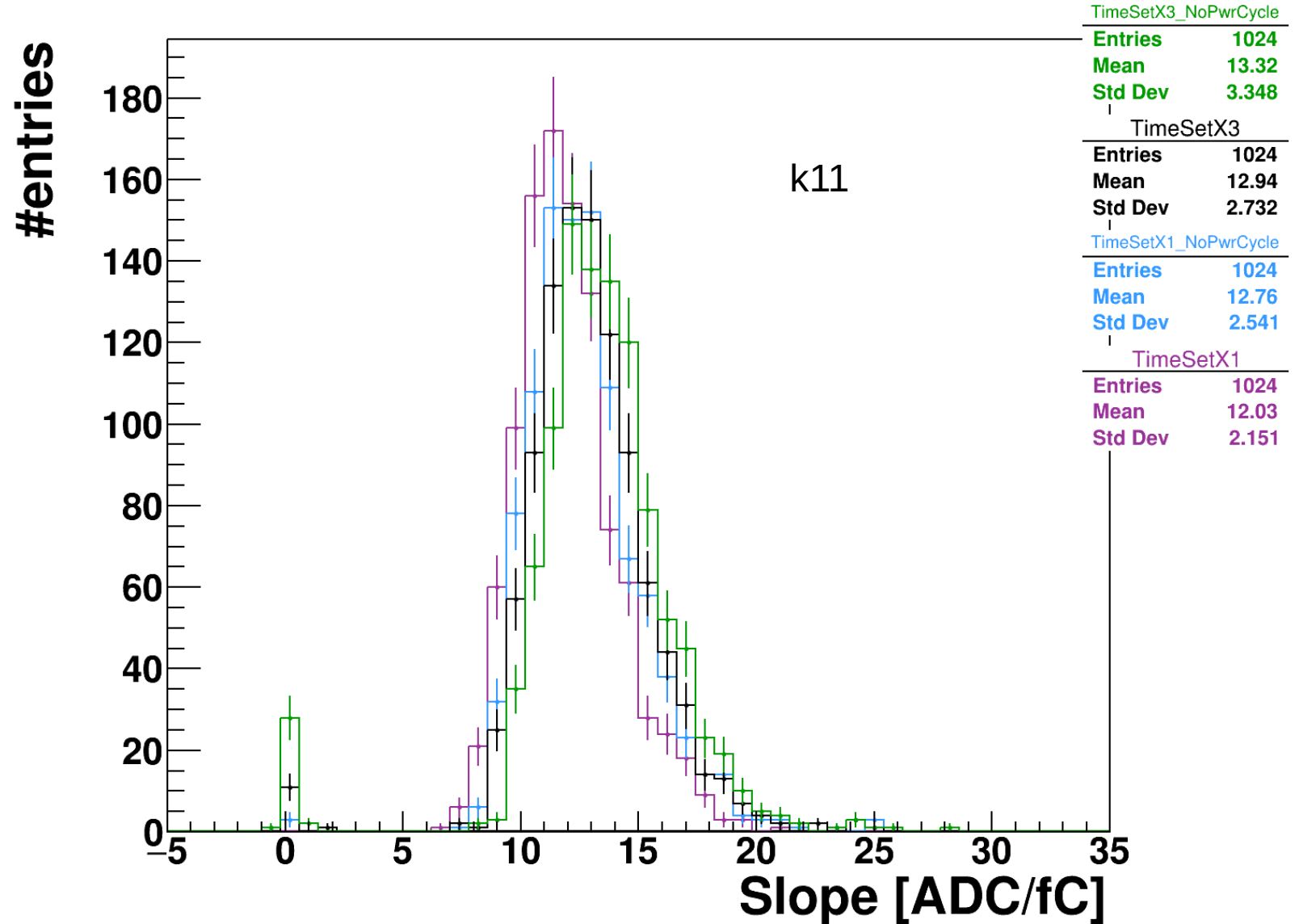


# Investigating power pulsing

- Dieter is confused by why increasing the start-up phase by a factor of 3 improves the performance of some KpiX.
- His suggestion was to run the system without power pulsing to see if the power pulsing operation is at fault.
- I was not aware the chip can run without power pulsing but by setting CntrlDisPwrCycle to True it should stop the chip from turning off.
- I had performed a run at the testbeam with those settings with noise but that was not conclusive so I performed 4 new runs in the E-Lab this week
  - TimeSetX1
  - TimeSetX1 + NoPwrCycle
  - TimeSetX3
  - TimeSetX3 + NoPwrCycle

# Investigating power pulsing

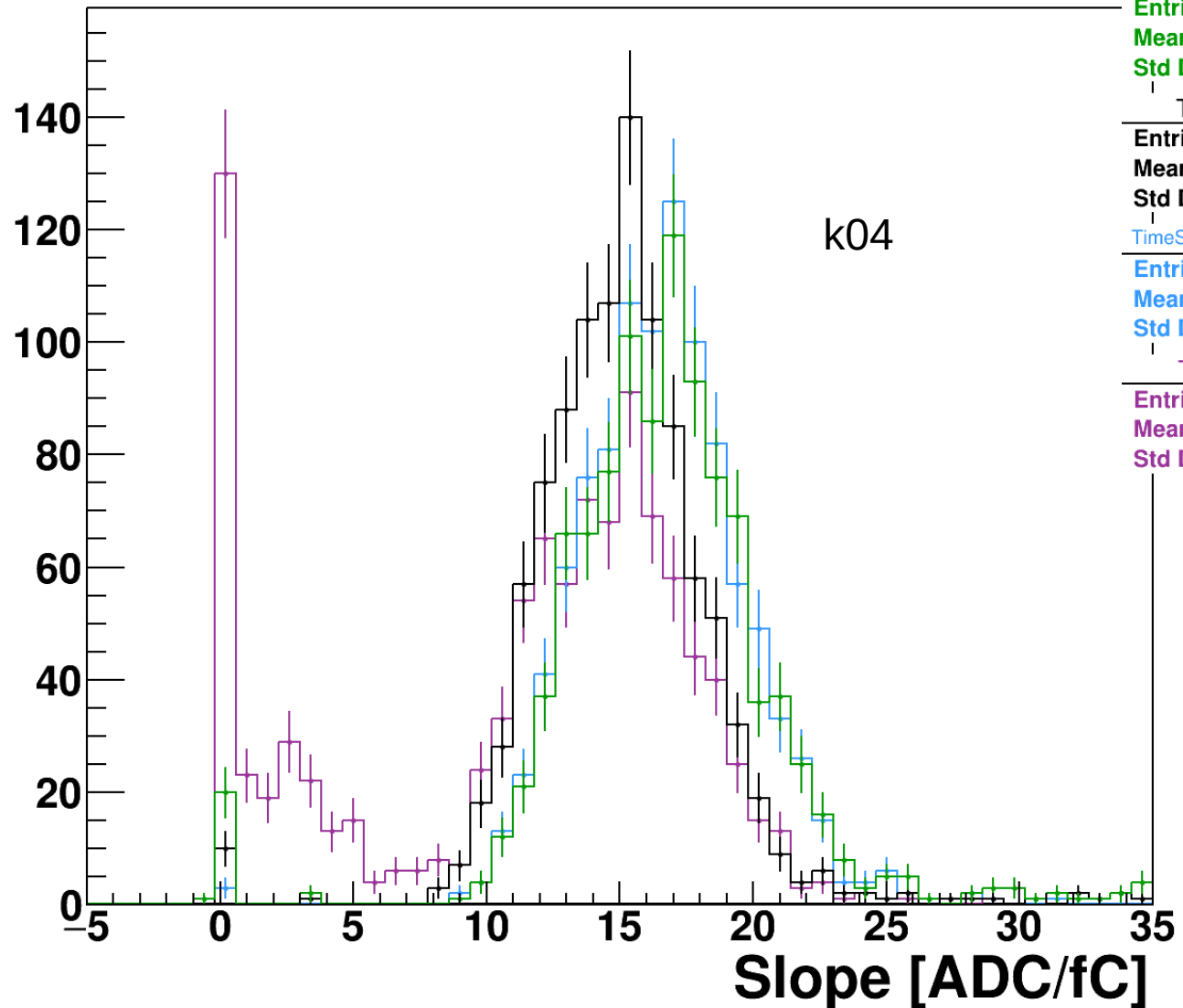
- First a crosscheck of the slope distributions as this is where TimeSetX3 had the largest impact.
- In most cases it looks as shown in this plot. No real differences visible. Though without power cycling the number of 0 channels is often simply higher.



# Investigating power pulsing

- But looking at the worst KpiX we can see that similar to increasing the start up phase by a factor of 3 (Green+Black)  
Disabling the power cycling of the Kpix also recovers almost all of these channels.
- There is also a shift in the slopes to higher values when power cycling is disabled but this might very well just be the slight variation inherent in the system.

#entries

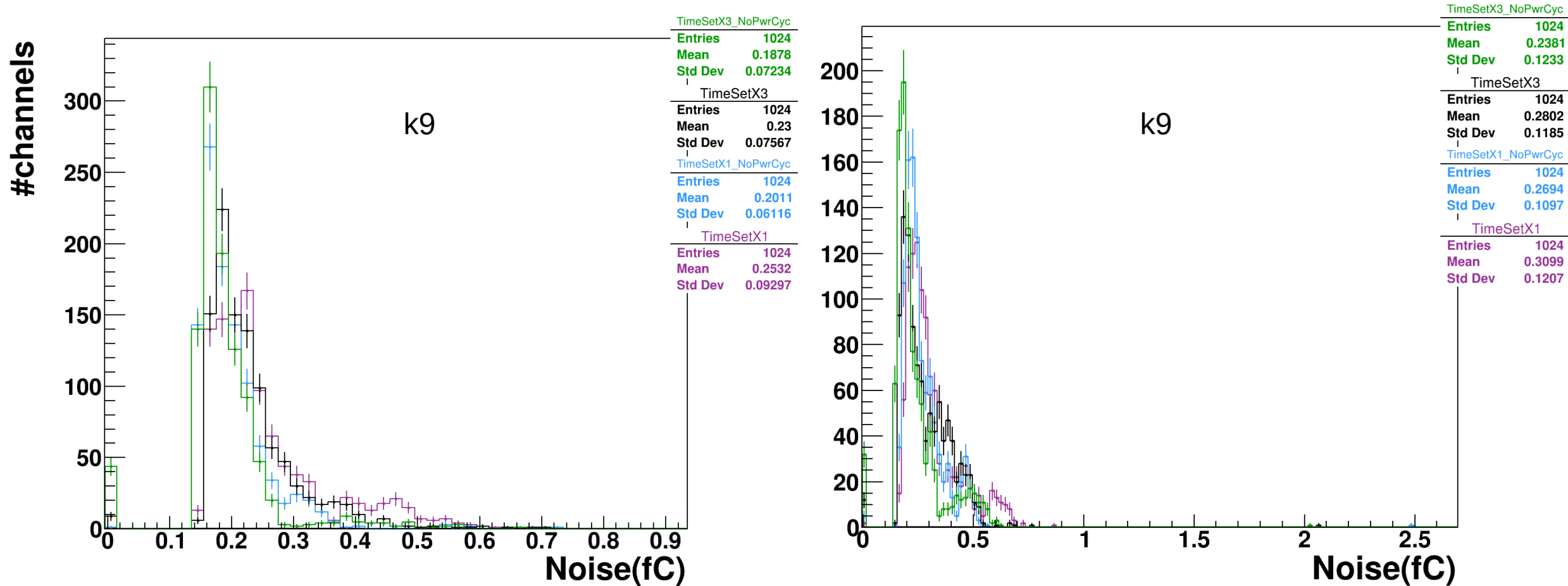


# Investigating power pulsing

- The next thing to check is how the disabling of the power pulsing influences the noise.
- Many of the sensors/kpix are in the backup part but here are some representative plots
- **I repeated the noise measurements (not the calibration) again in reverse order of data taking and I still see the exact same results as are shown below!**

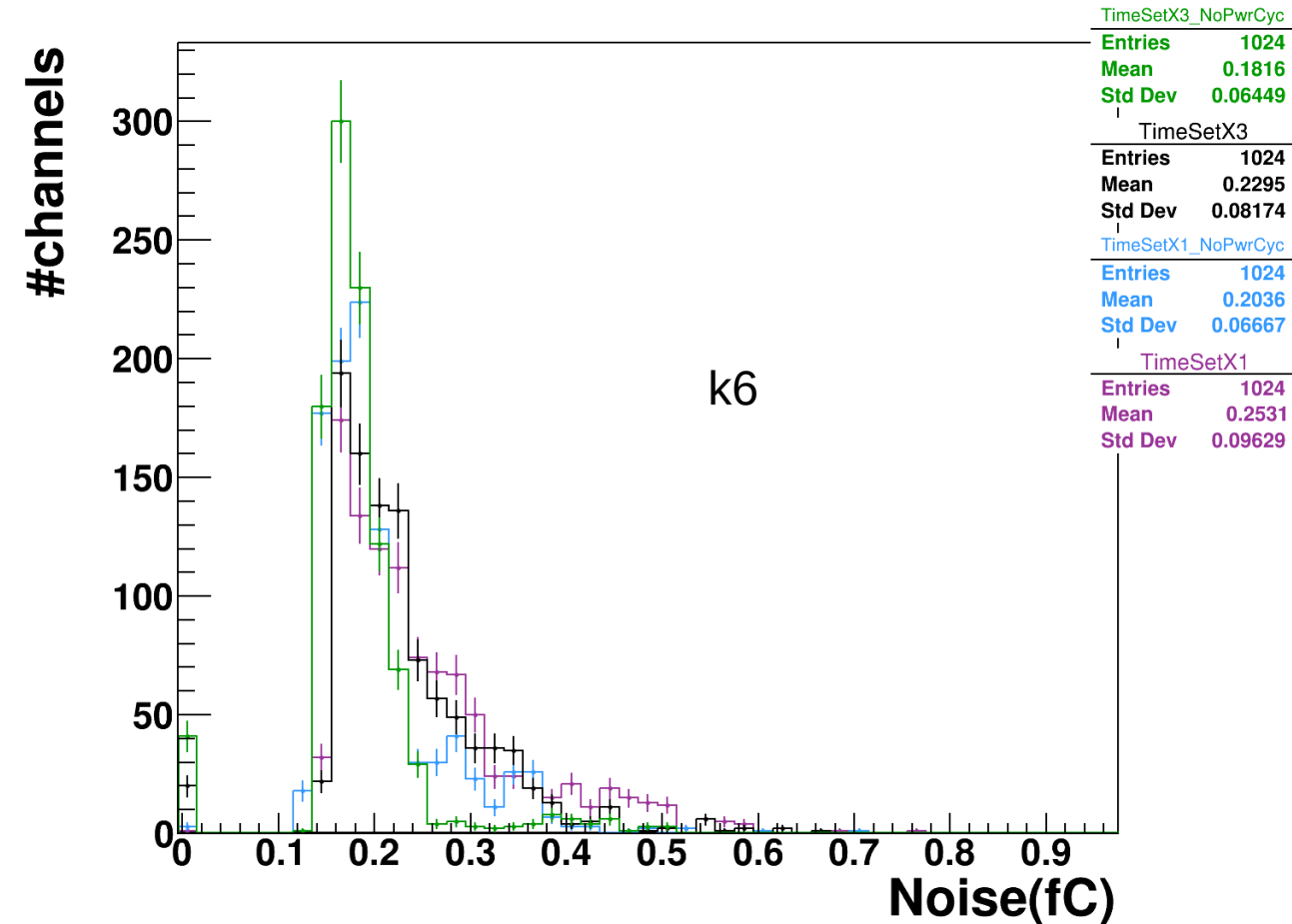
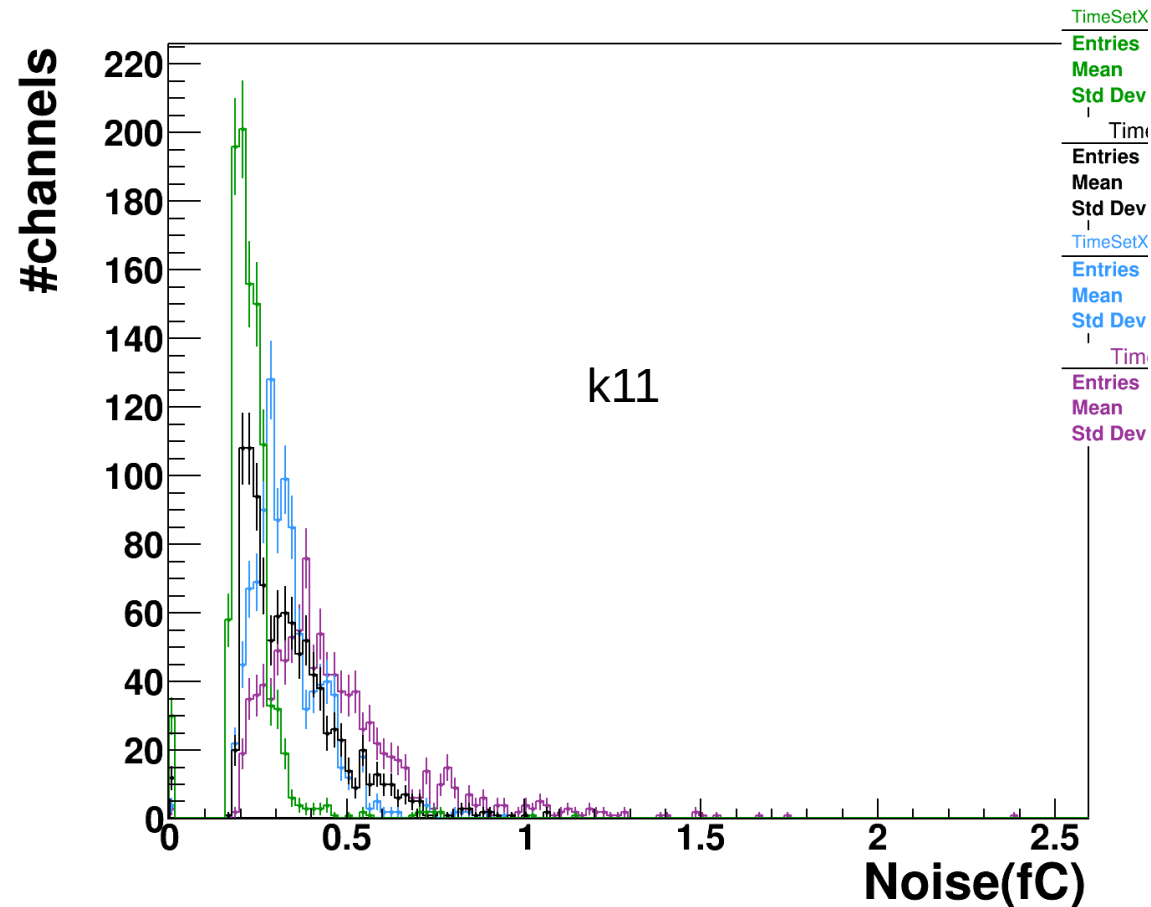
# Investigating power pulsing

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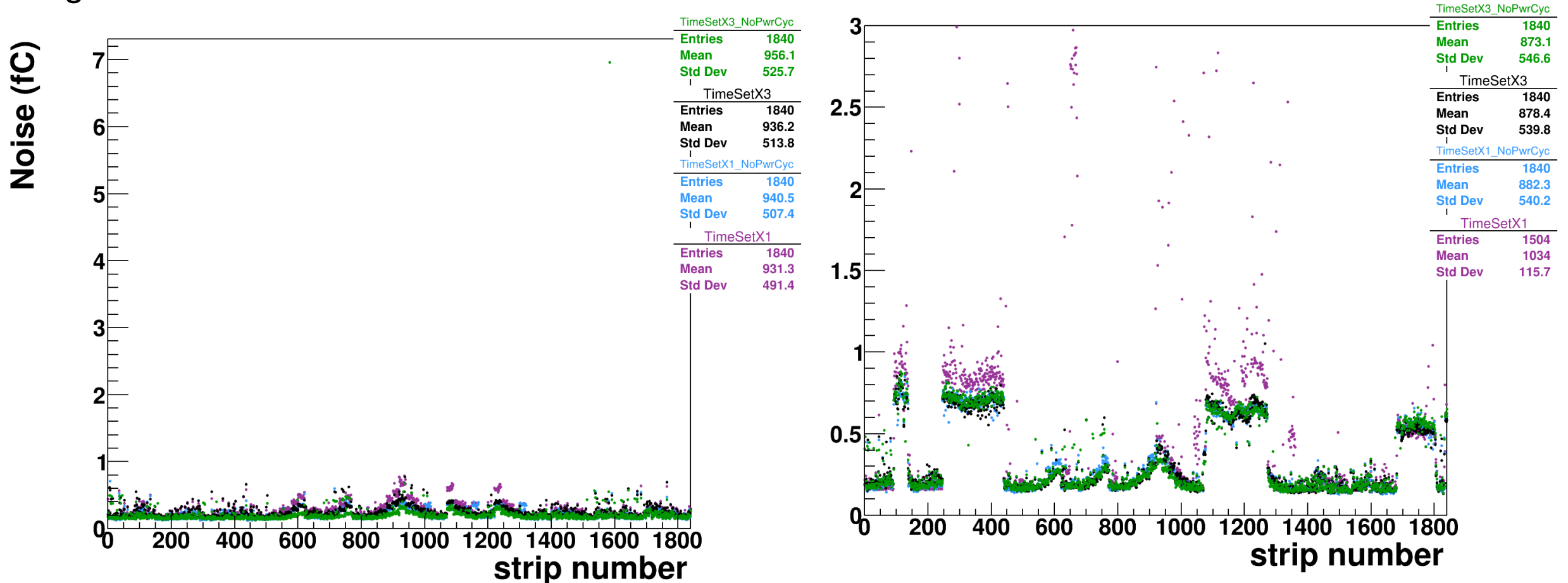
# Investigating power pulsing

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# Investigating power pulsing

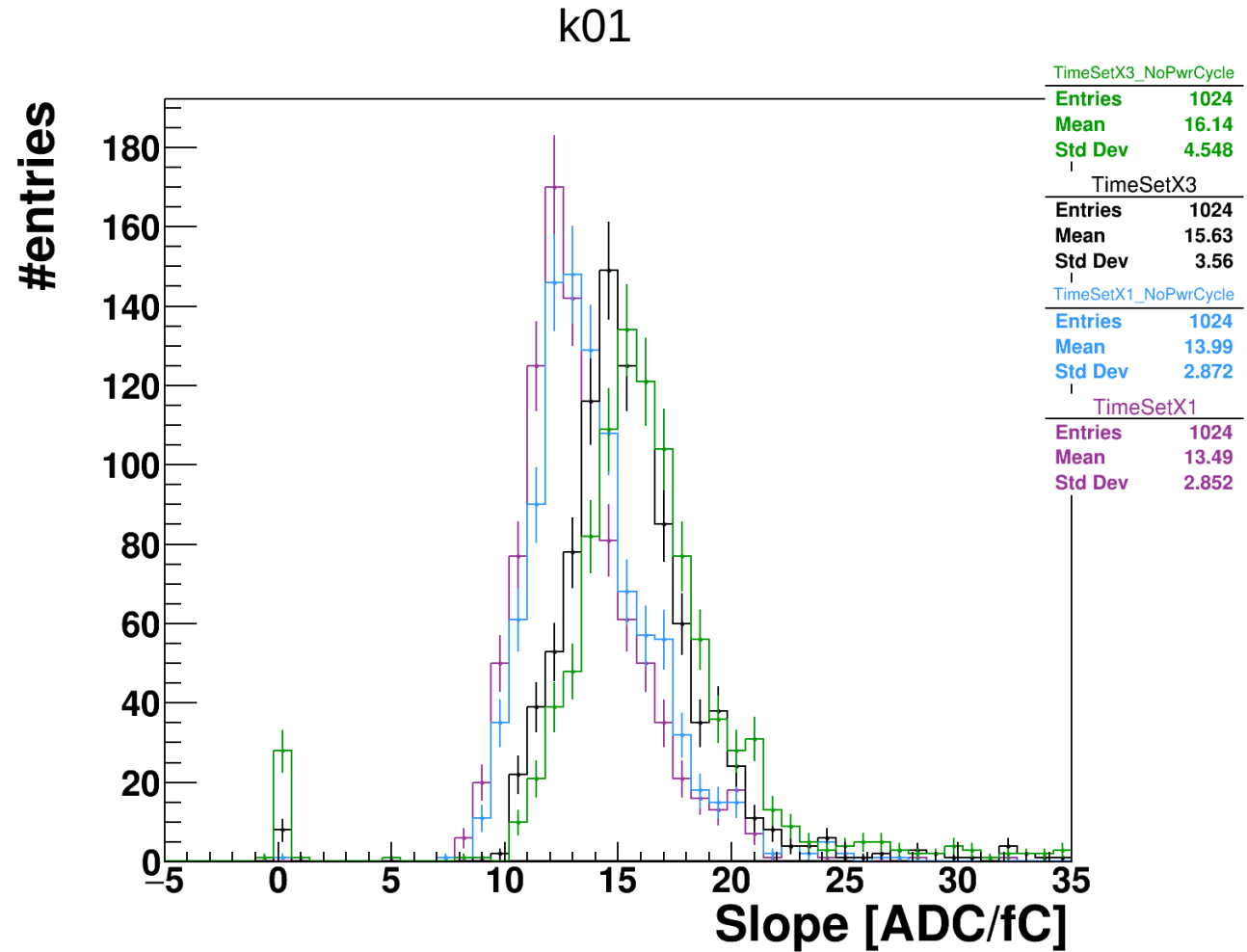
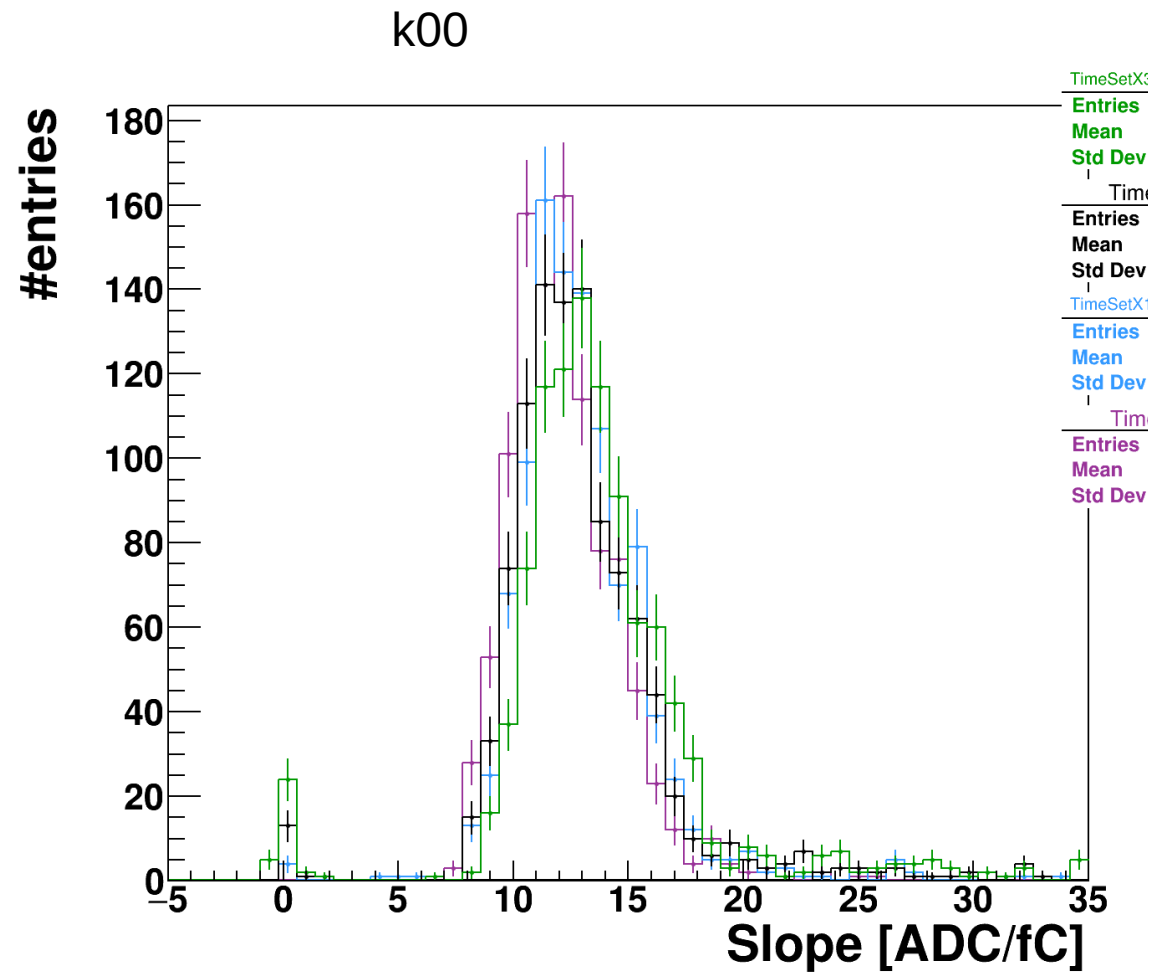
- The next thing to check is how the disabling of the power pulsing influences the noise.
- Many of the sensors/kpix are in the backup part but here are some representative plots
- In general cassette 1 is worse and has many other blocks of high noise that I currently



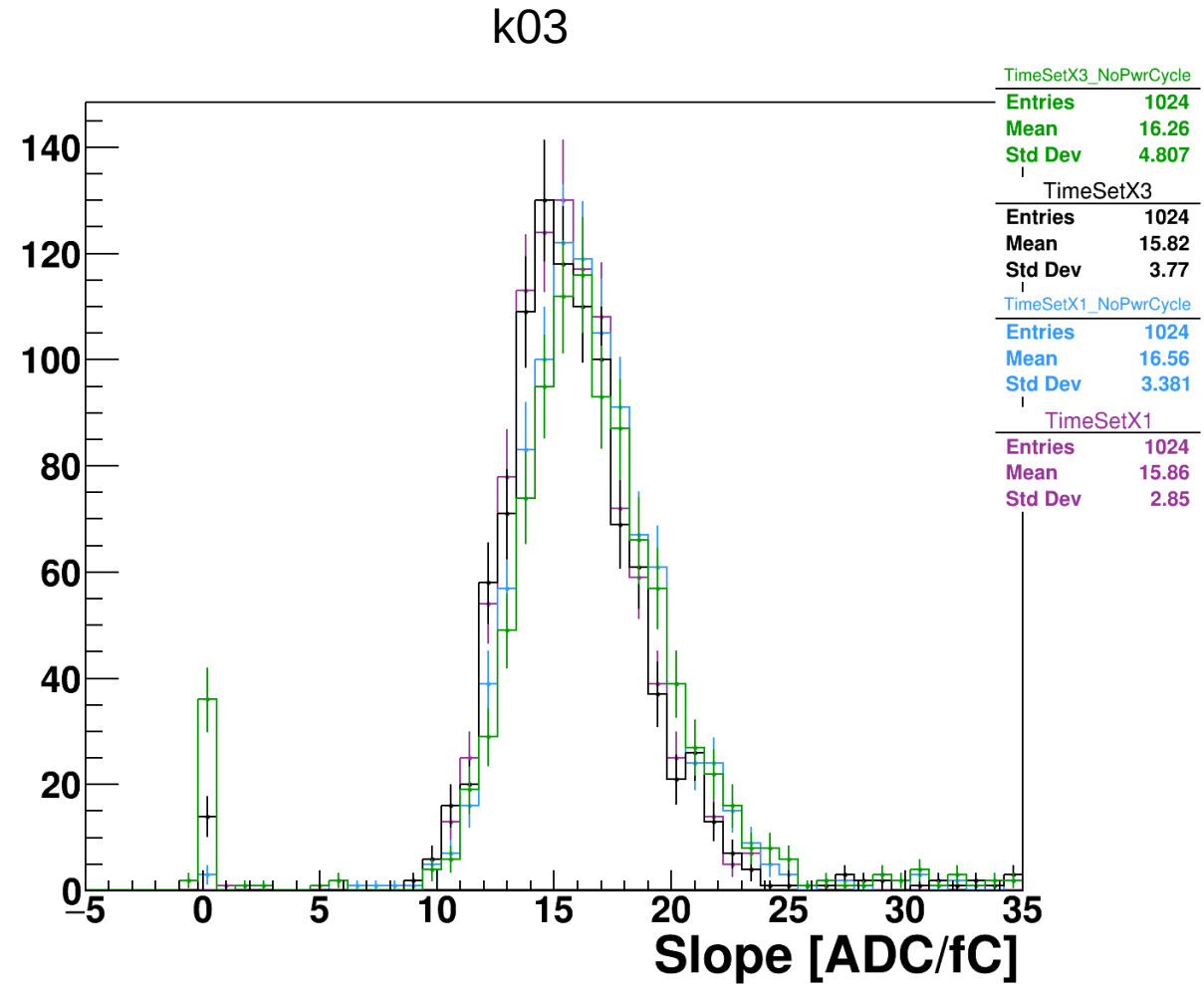
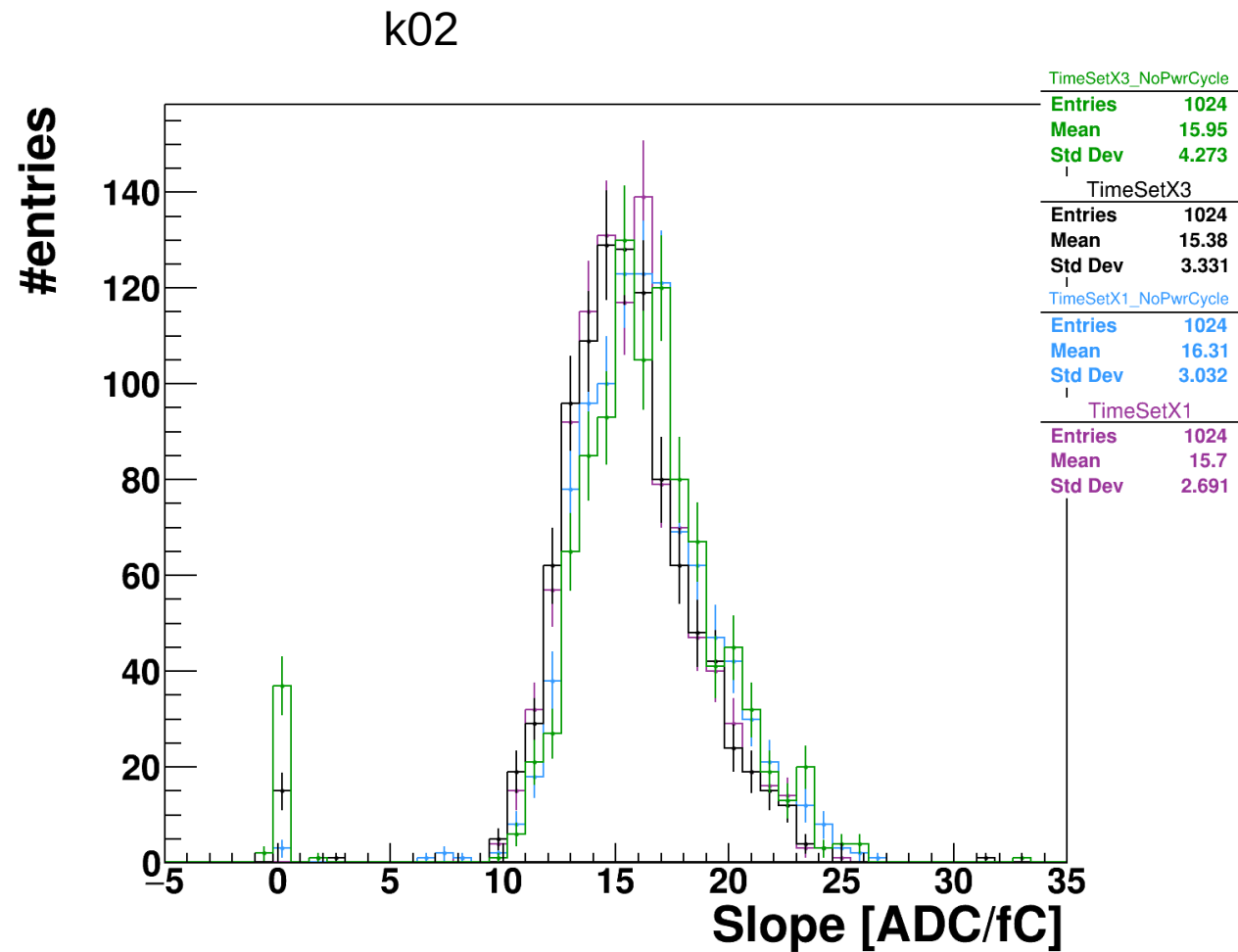
# Backup



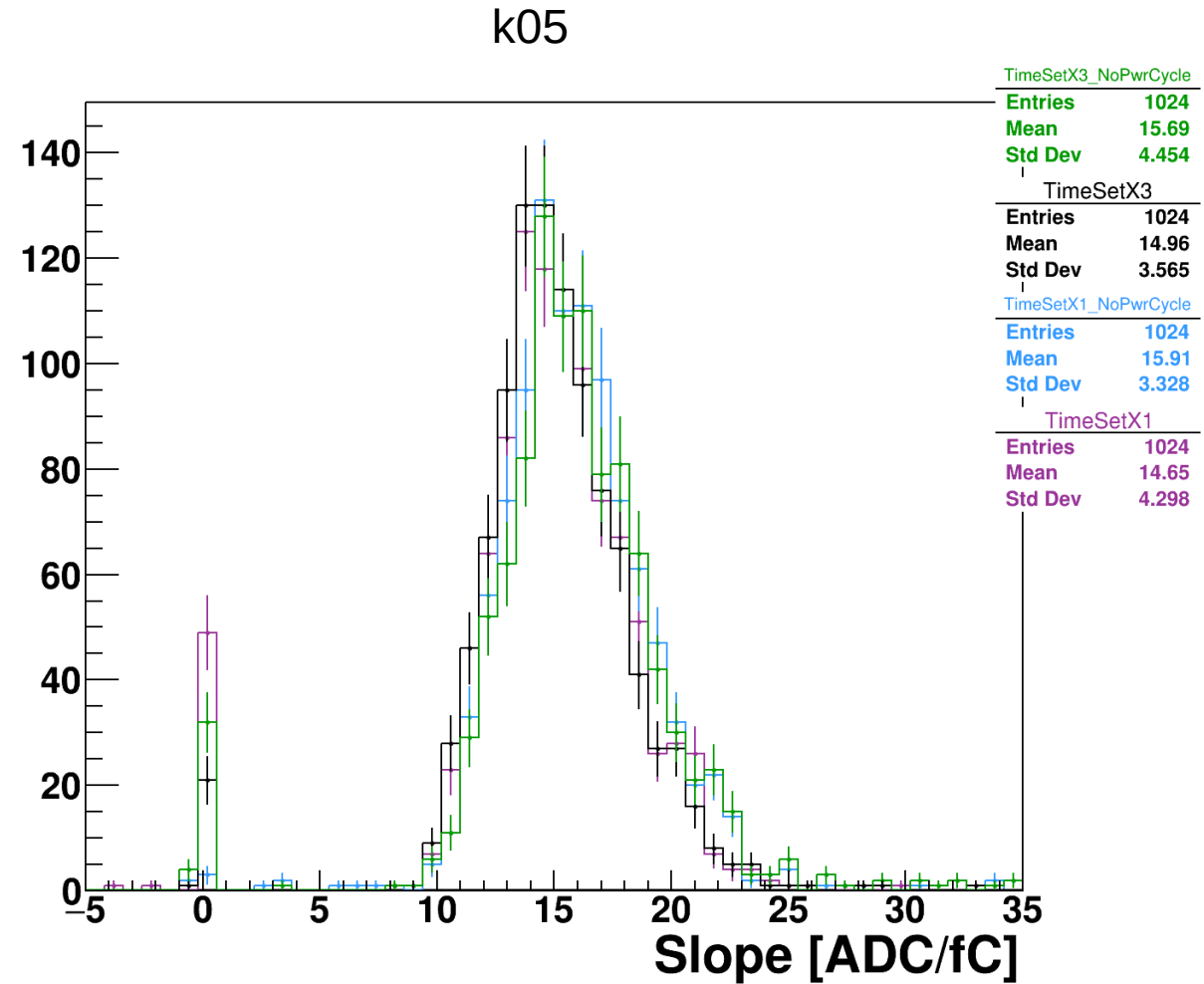
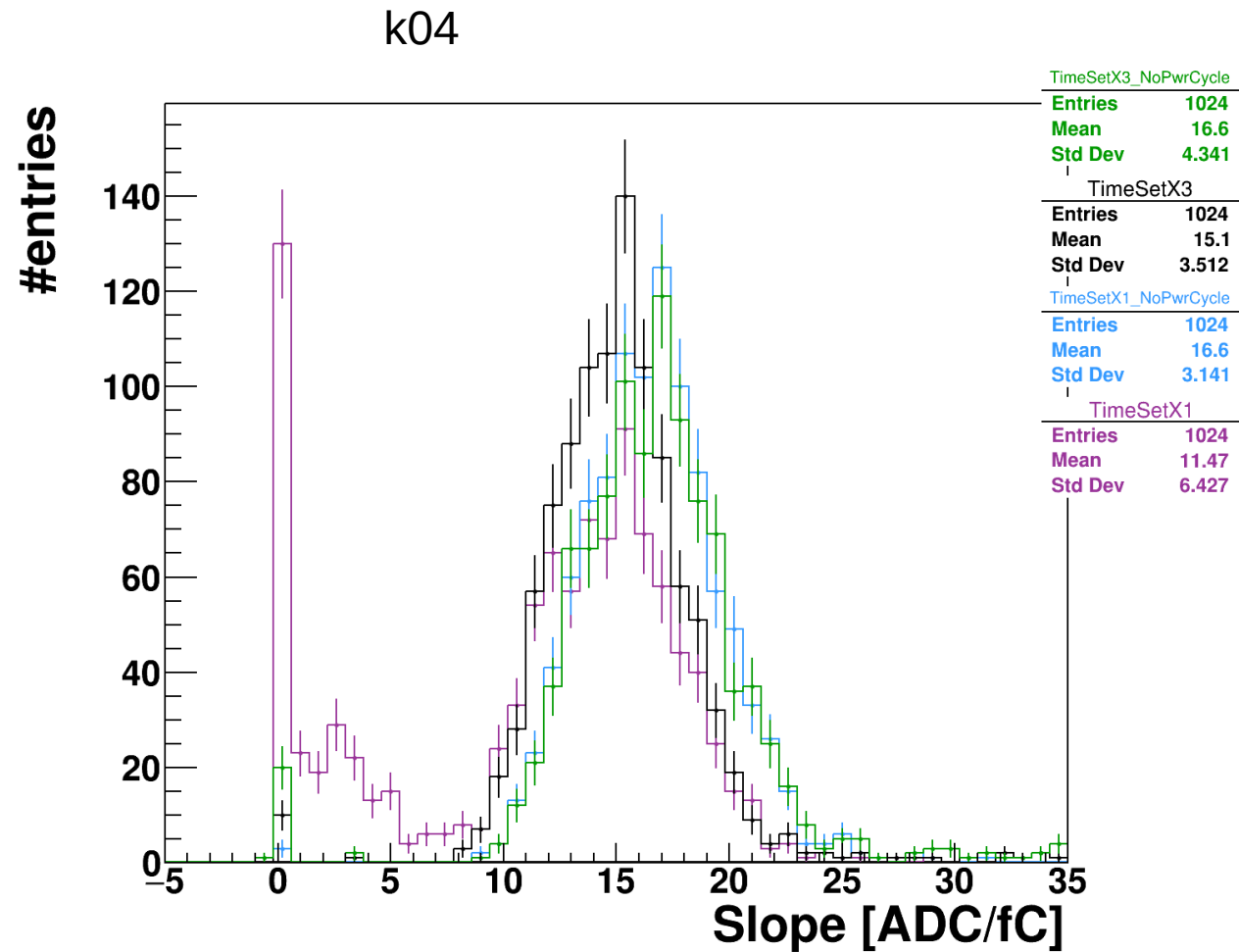
# Investigating power pulsing (Slopes)



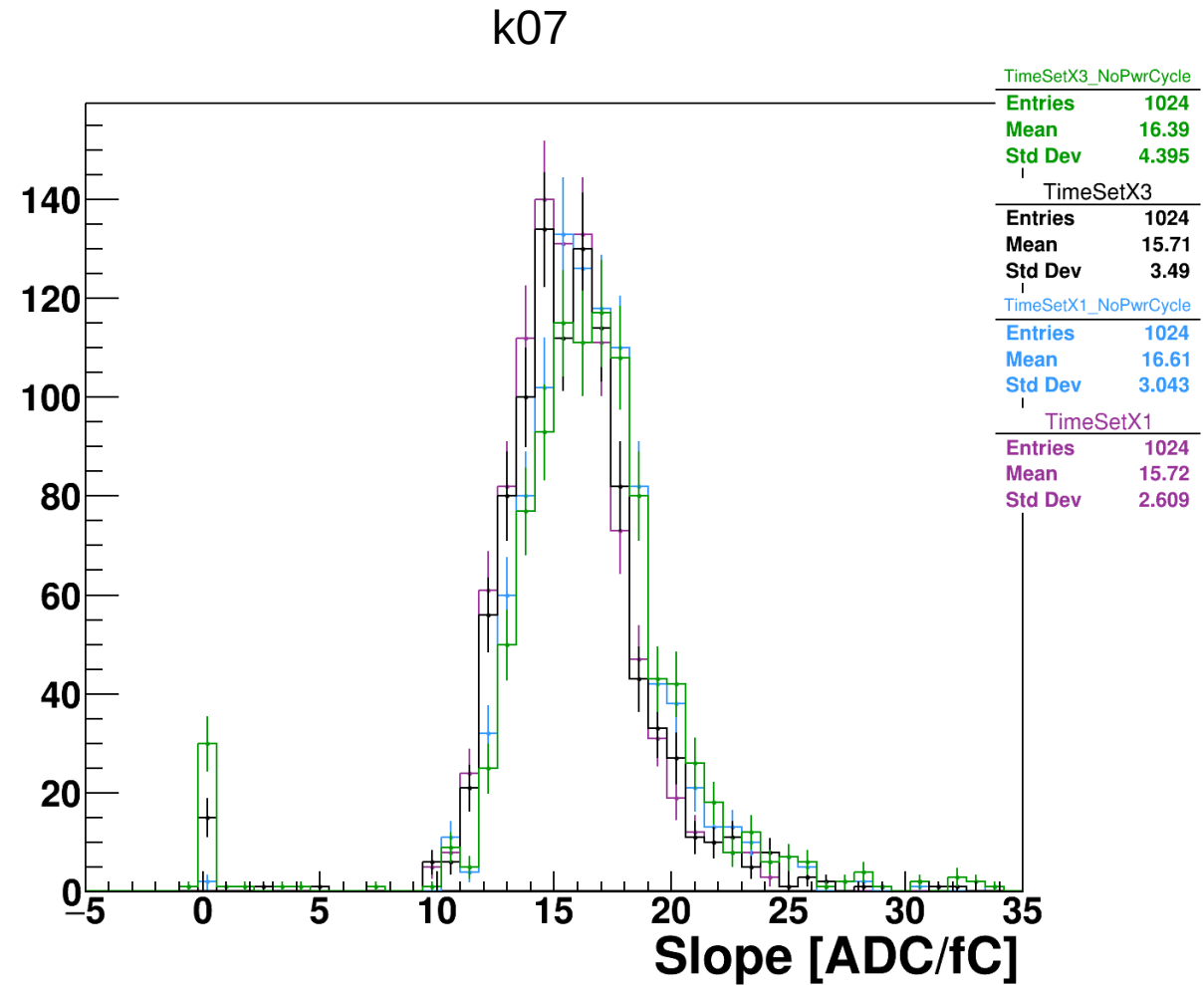
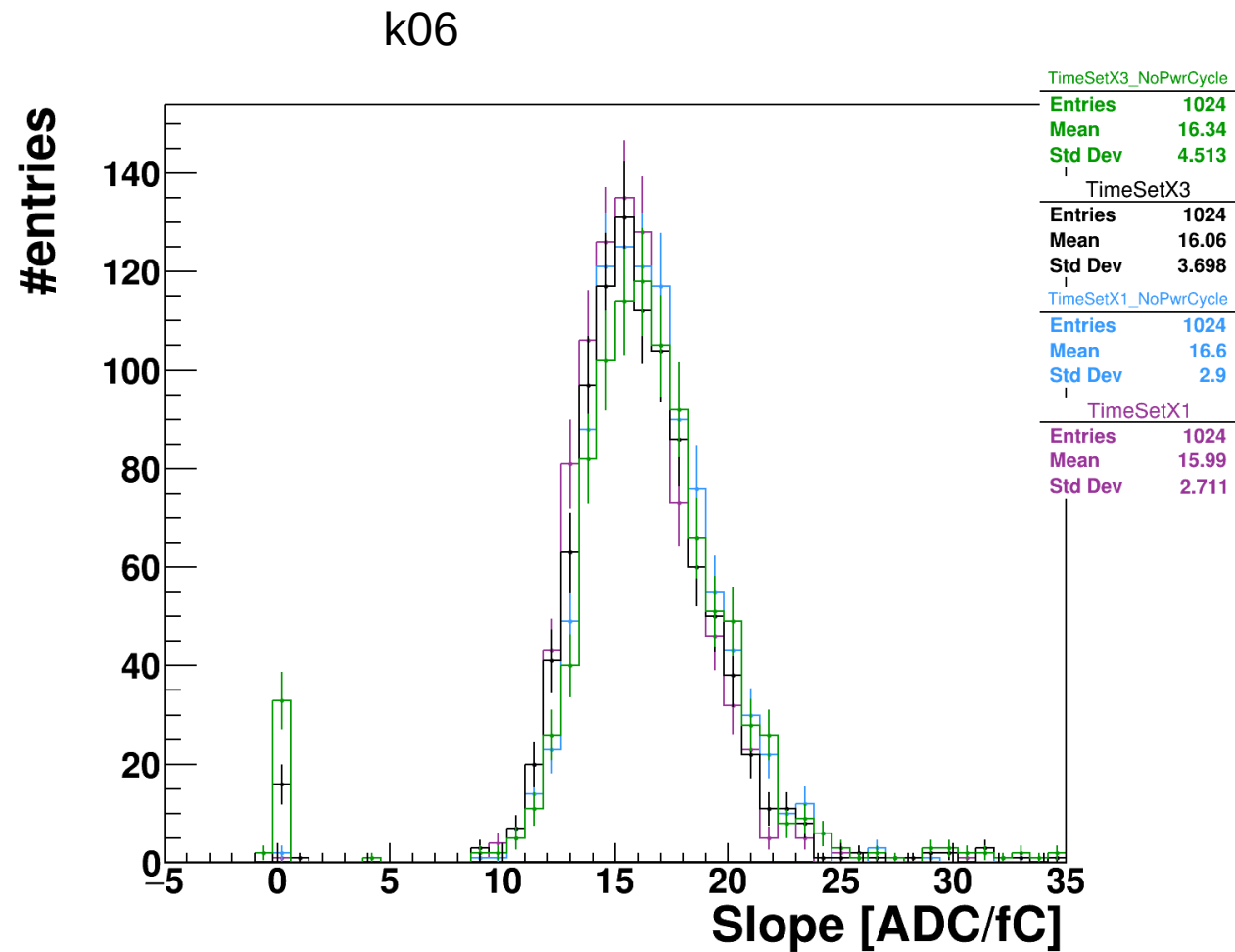
# Investigating power pulsing (Slopes)



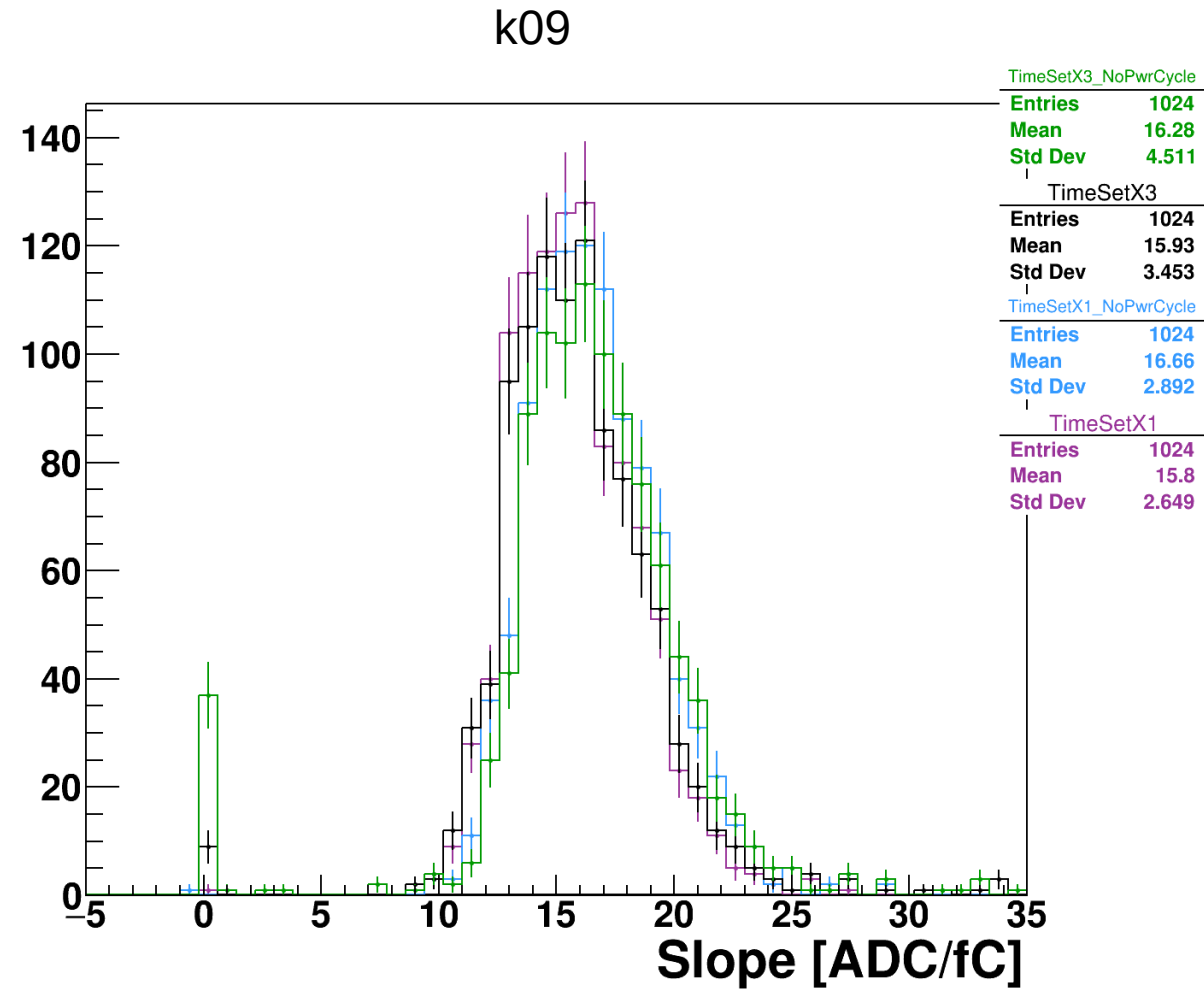
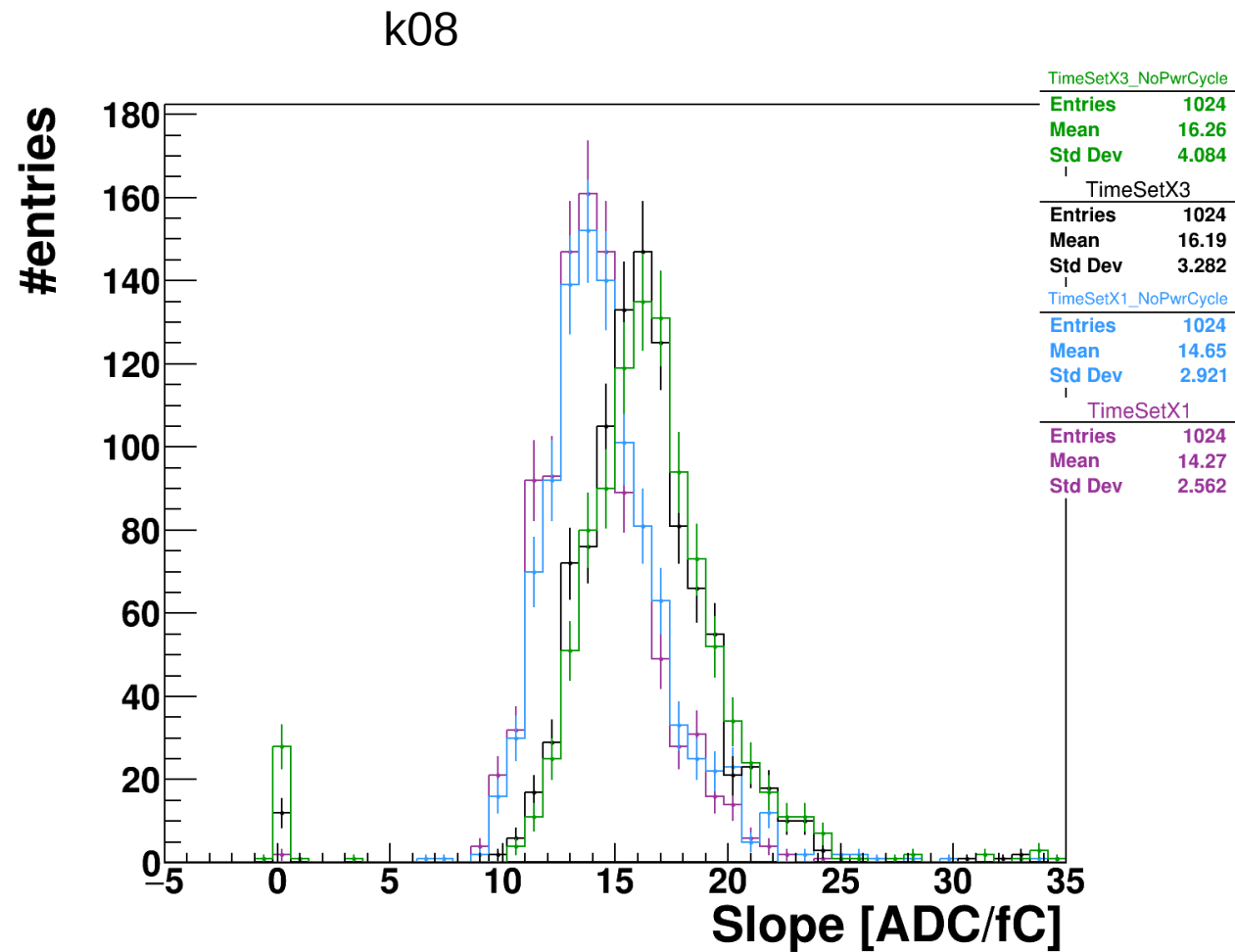
# Investigating power pulsing (Slopes)



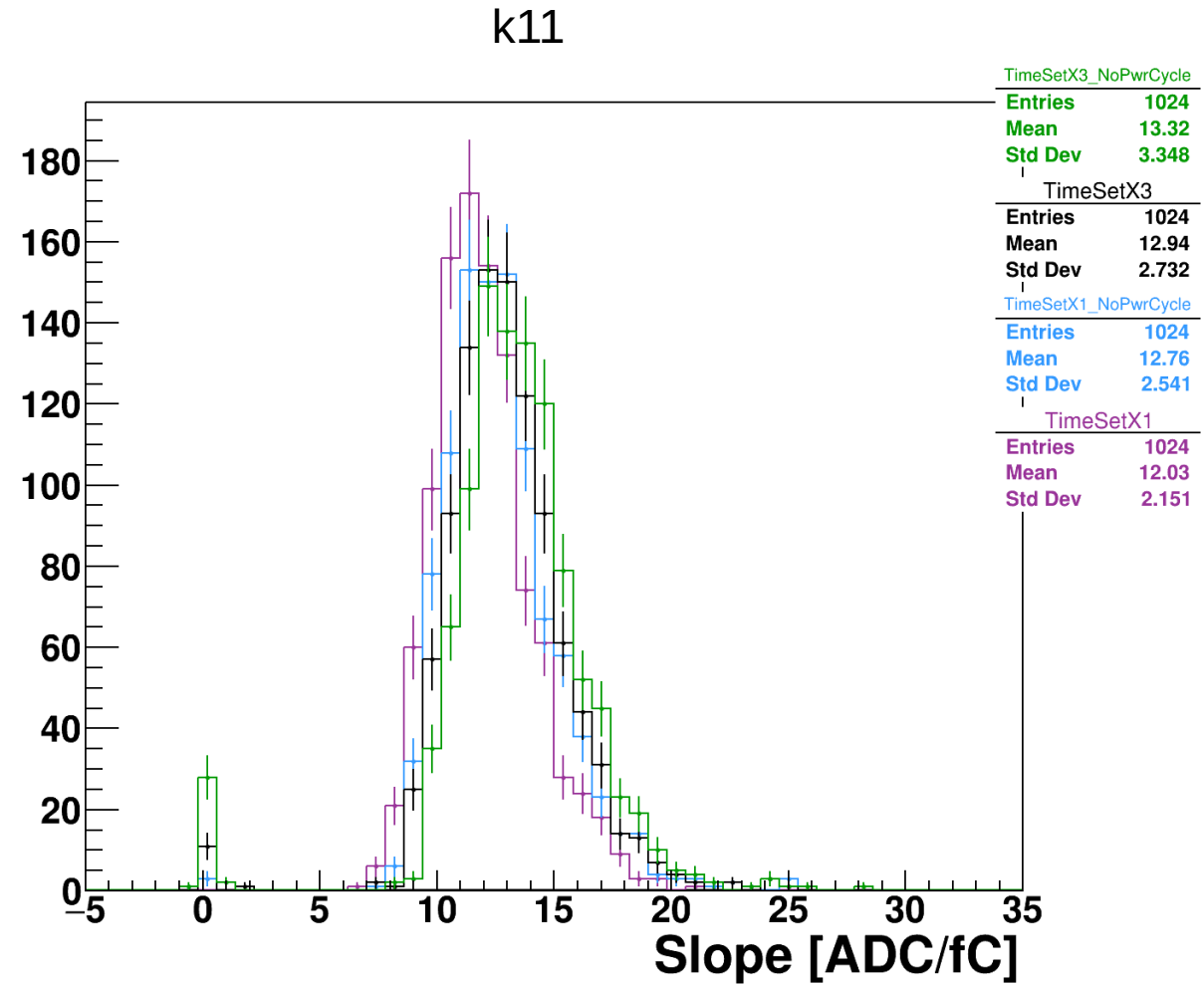
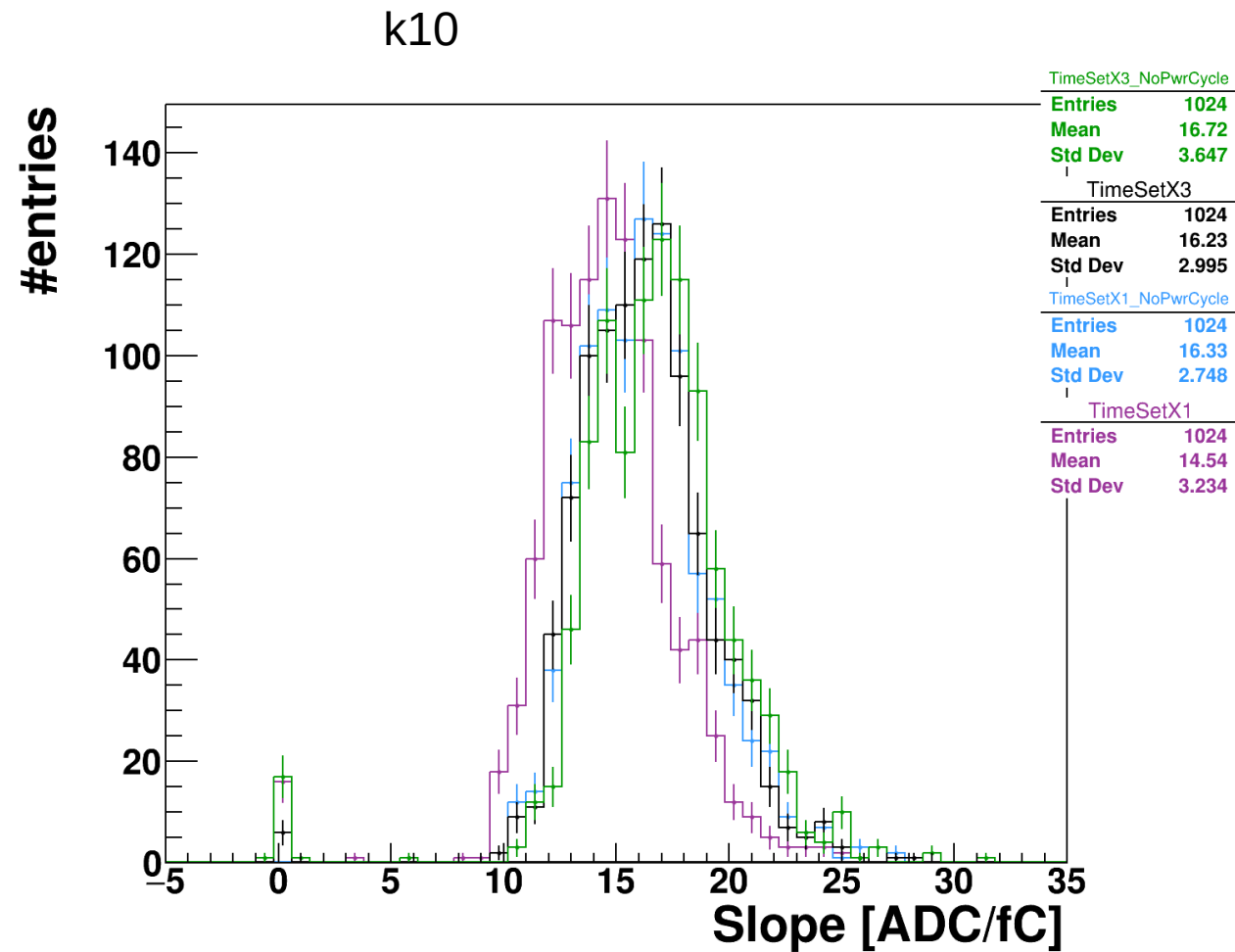
# Investigating power pulsing (Slopes)



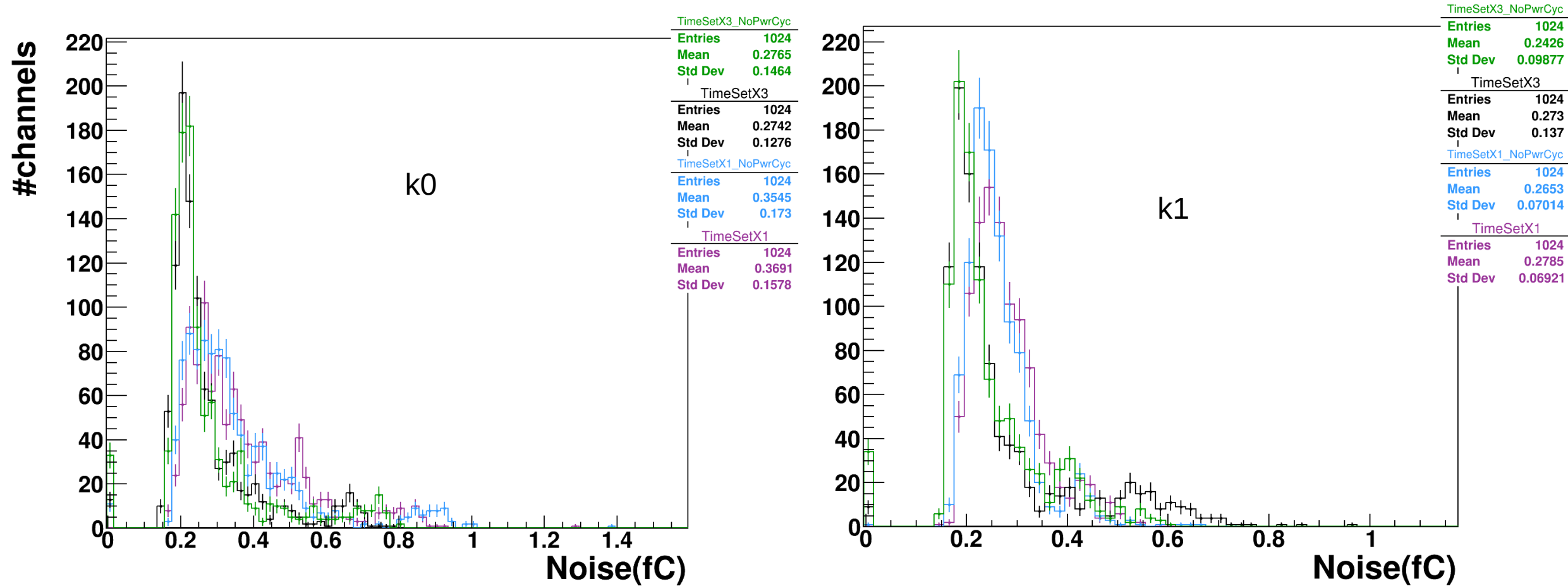
# Investigating power pulsing (Slopes)



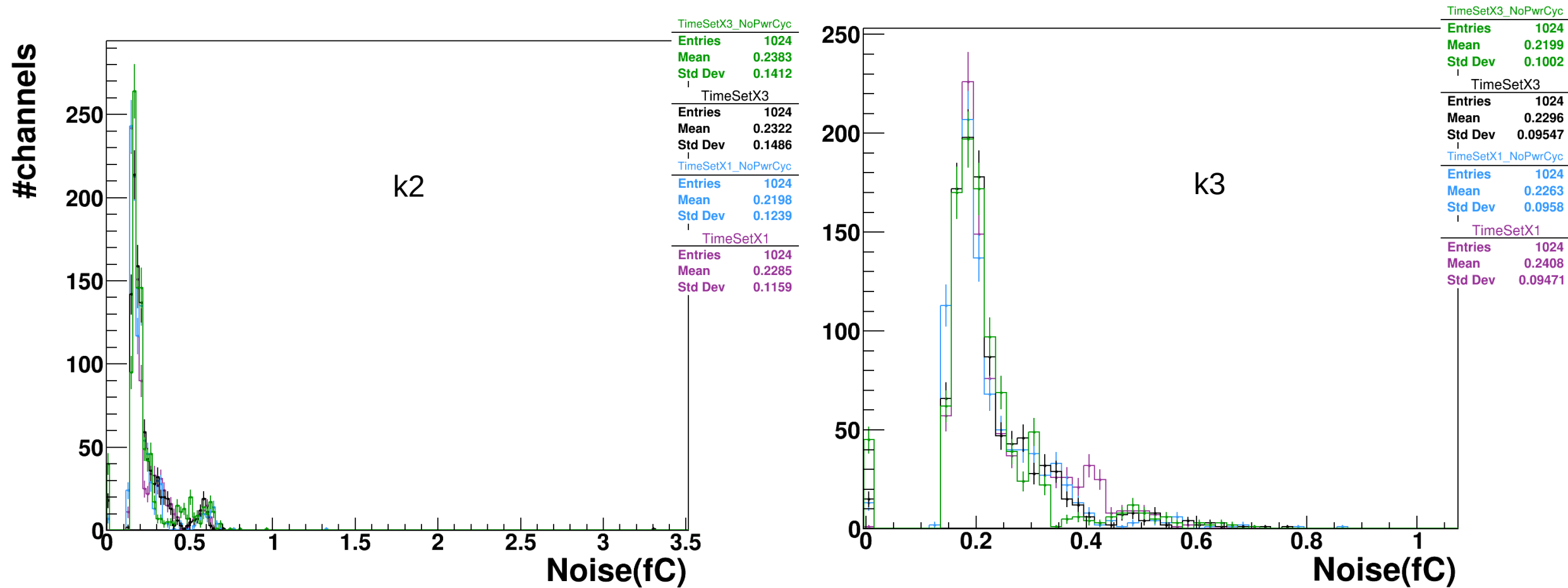
# Investigating power pulsing (Slopes)



# Investigating power pulsing (Noise distribution)

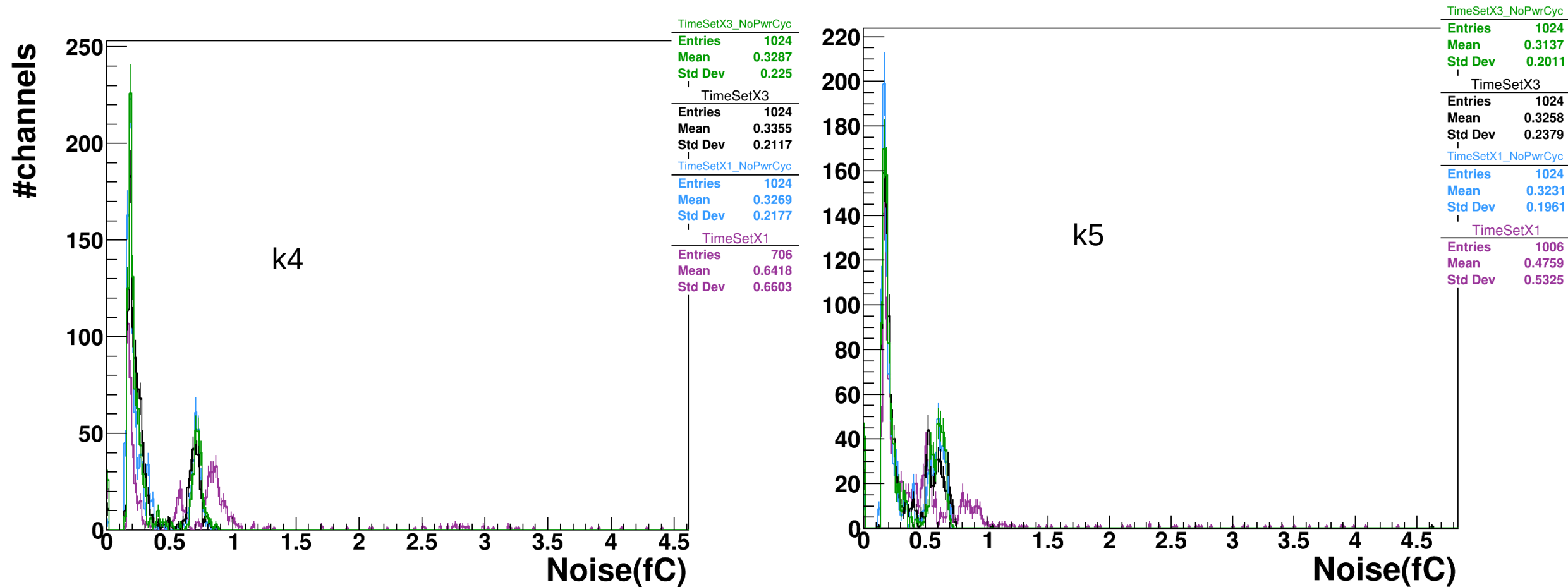


# Investigating power pulsing (Noise distribution)



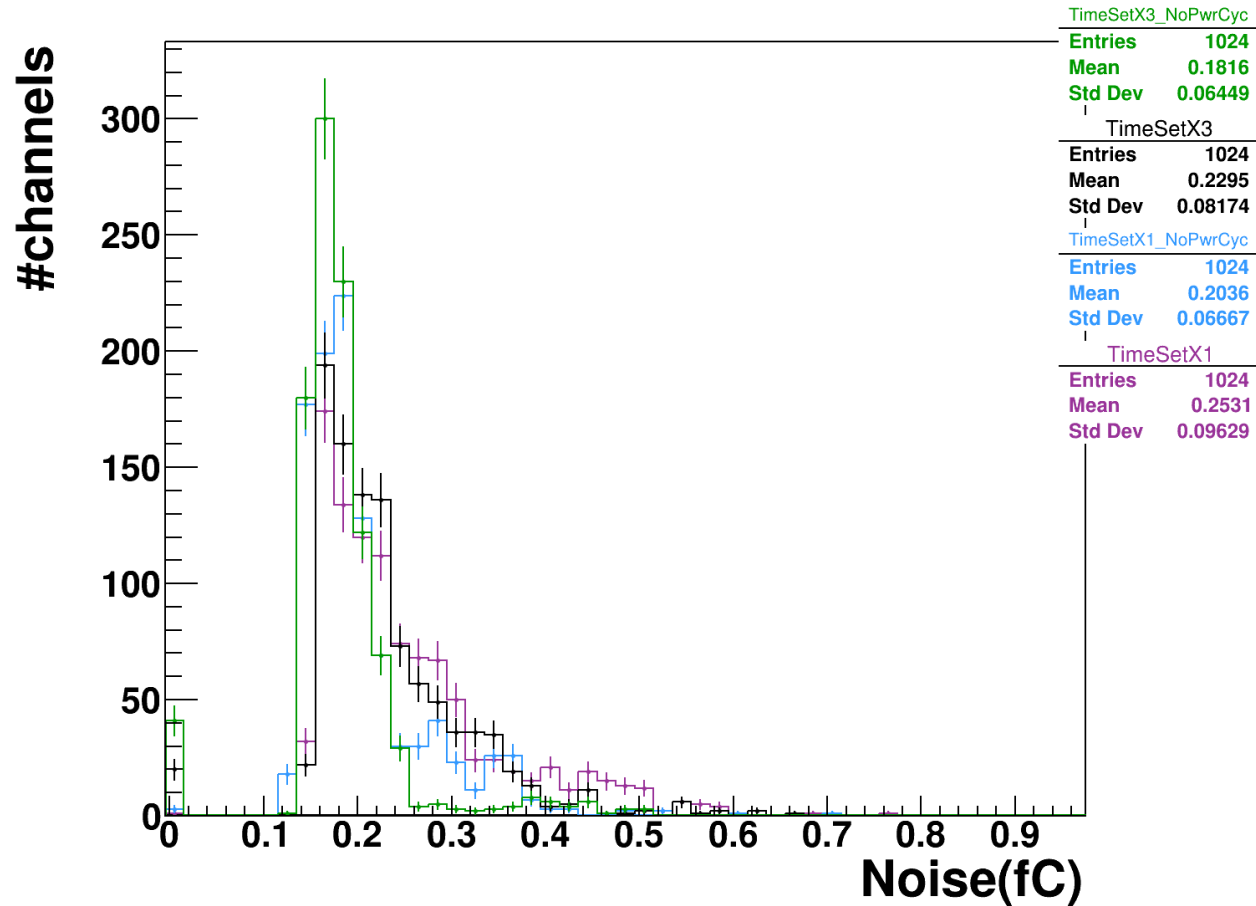


# Investigating power pulsing (Noise distribution)

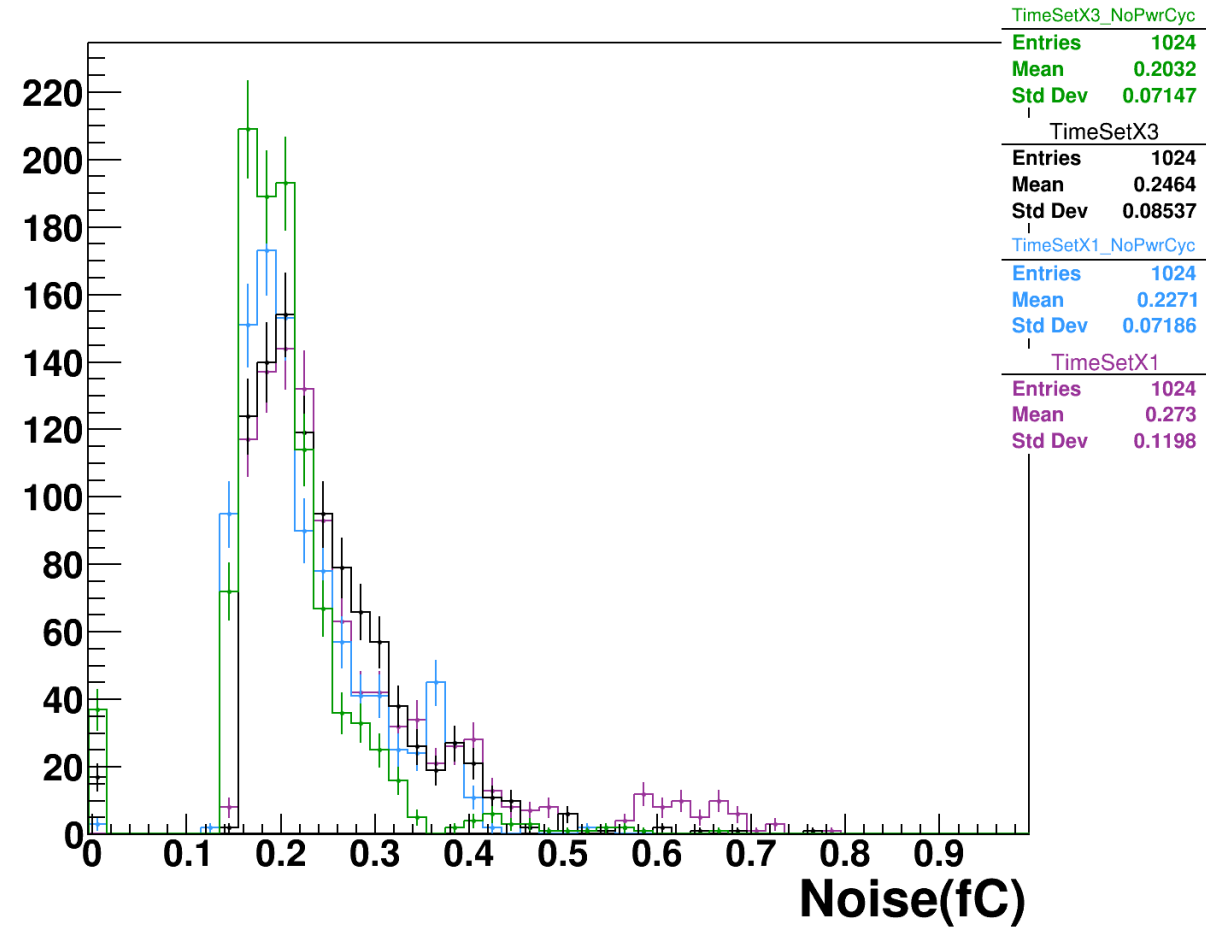


# Investigating power pulsing (Noise distribution)

k6

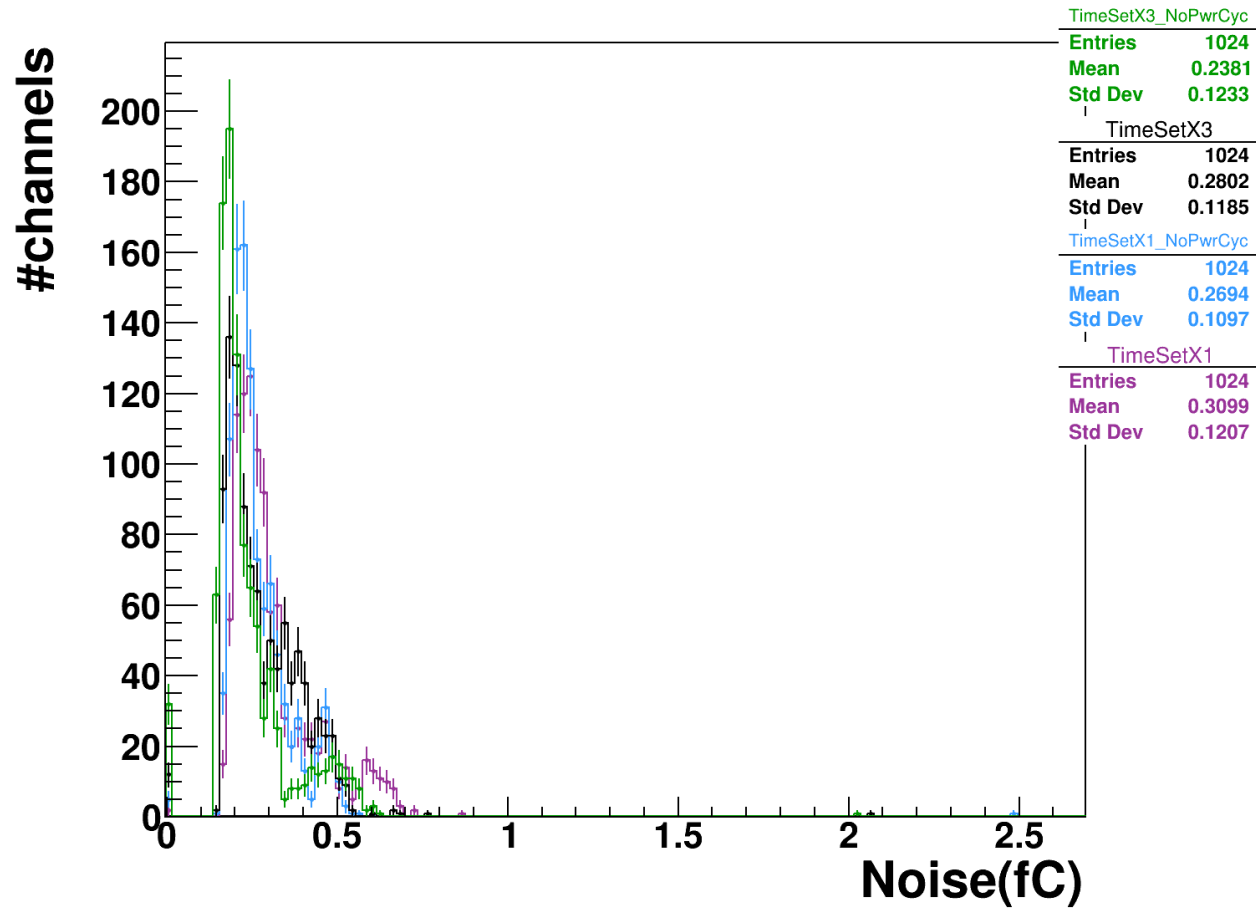


k7

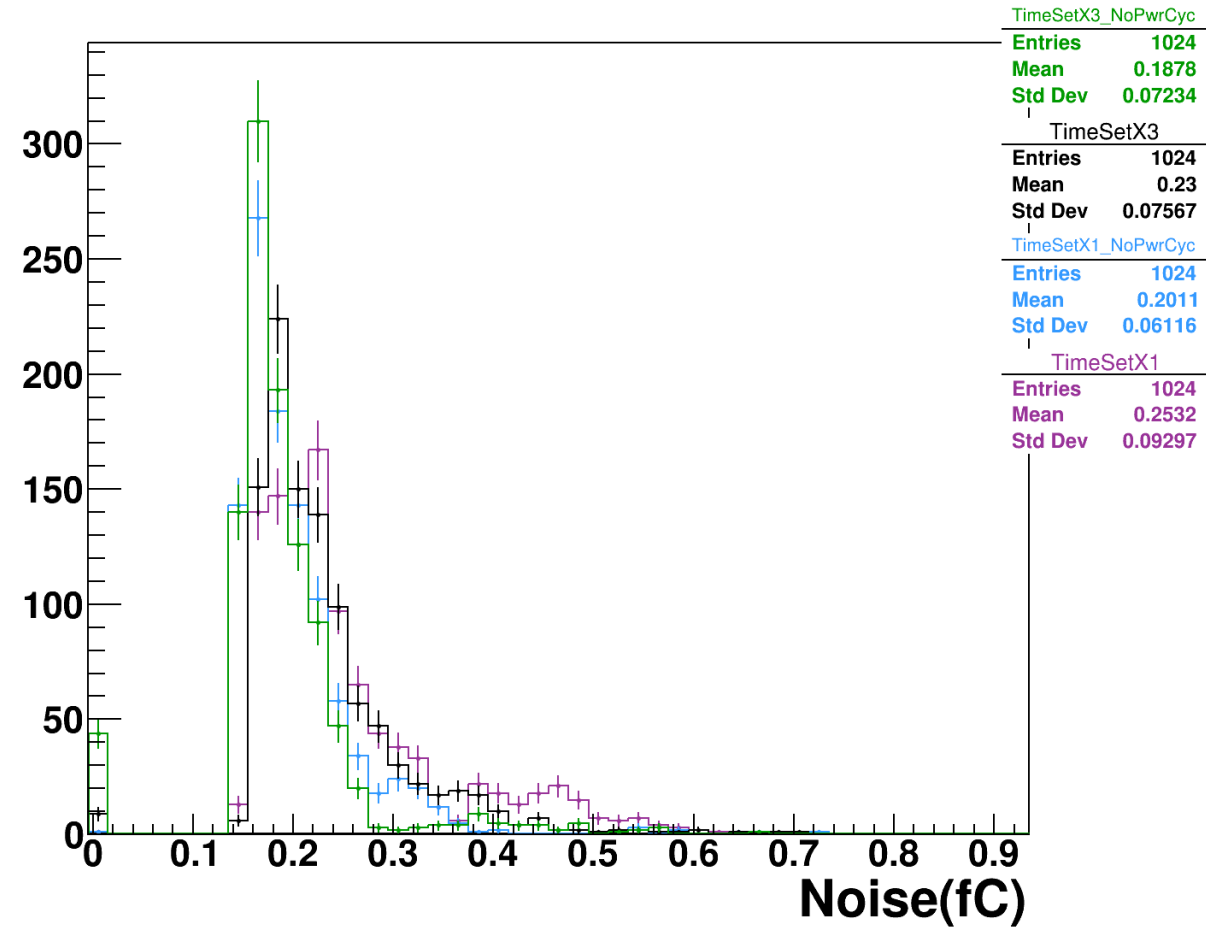


# Investigating power pulsing (Noise distribution)

k8

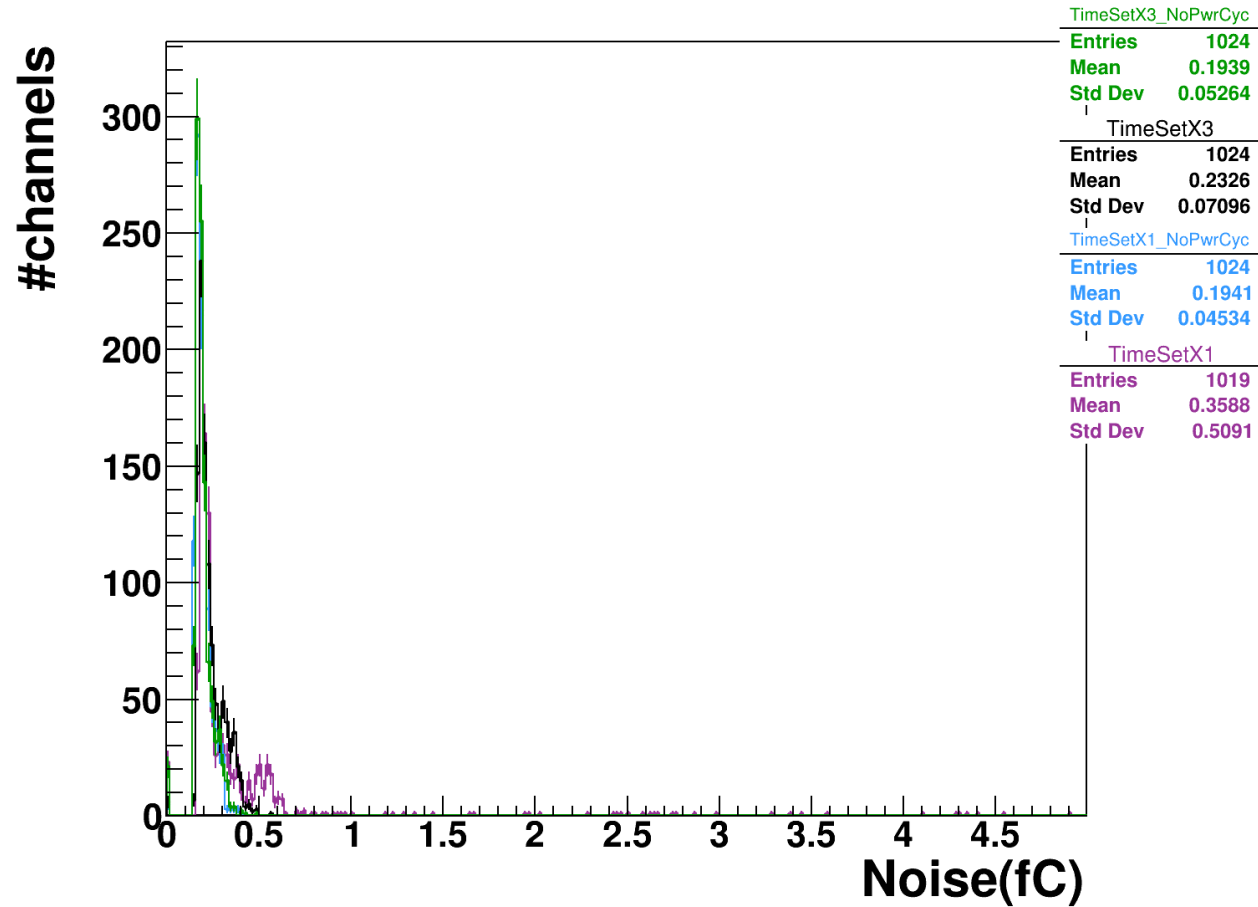


k9

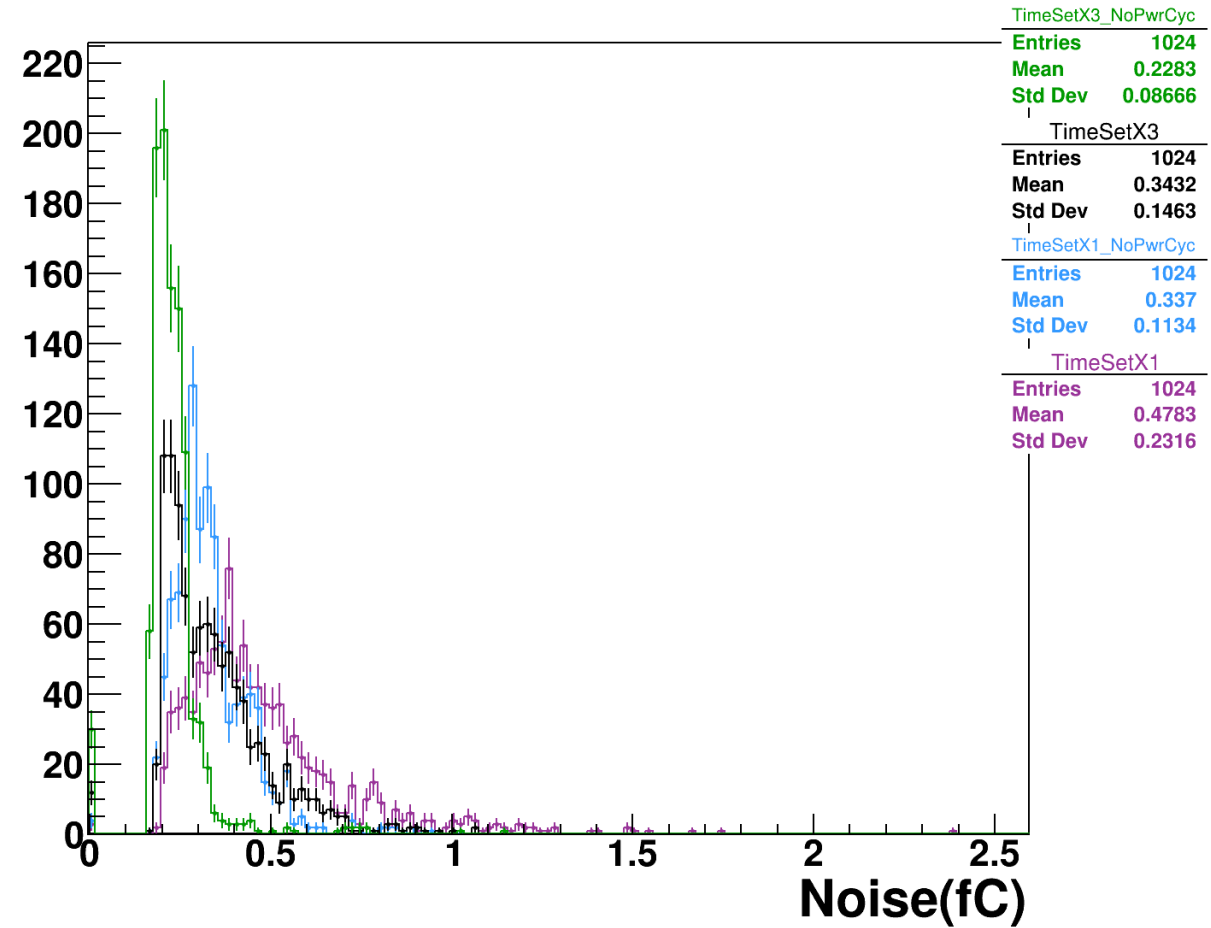


# Investigating power pulsing (Noise distribution)

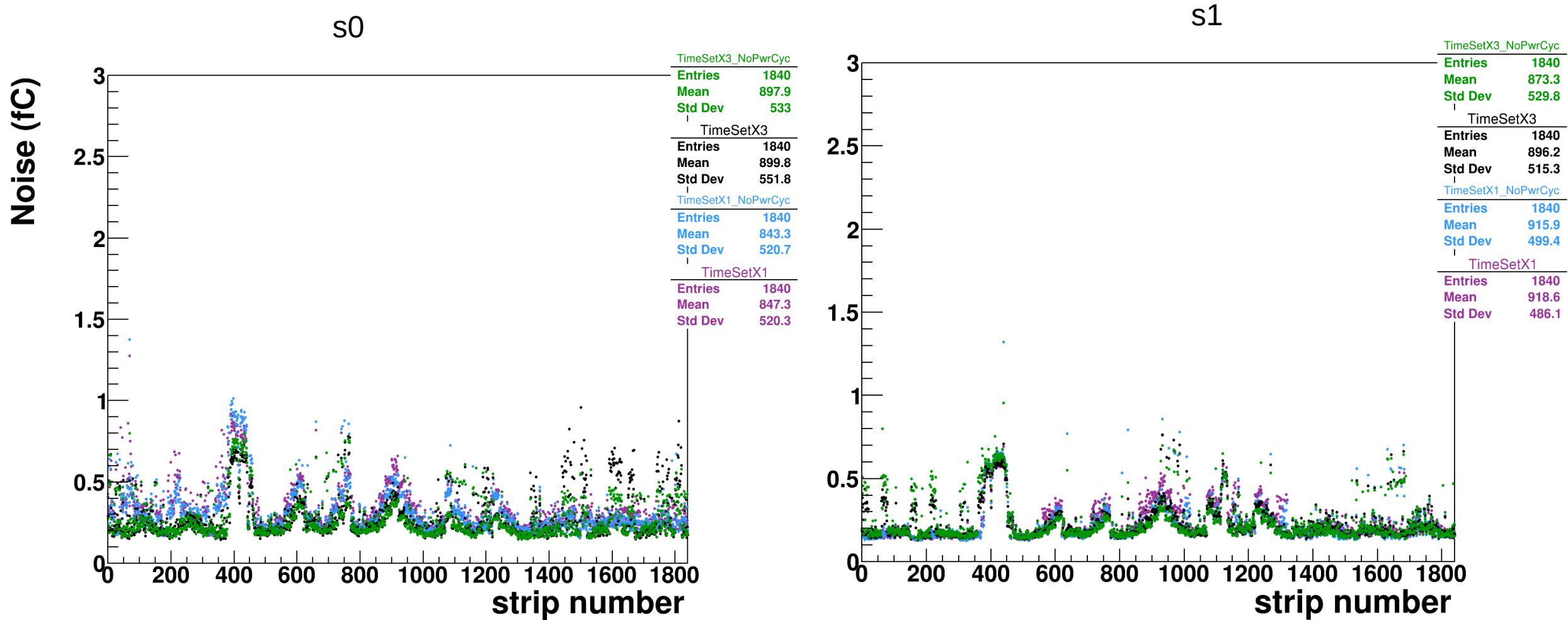
k10



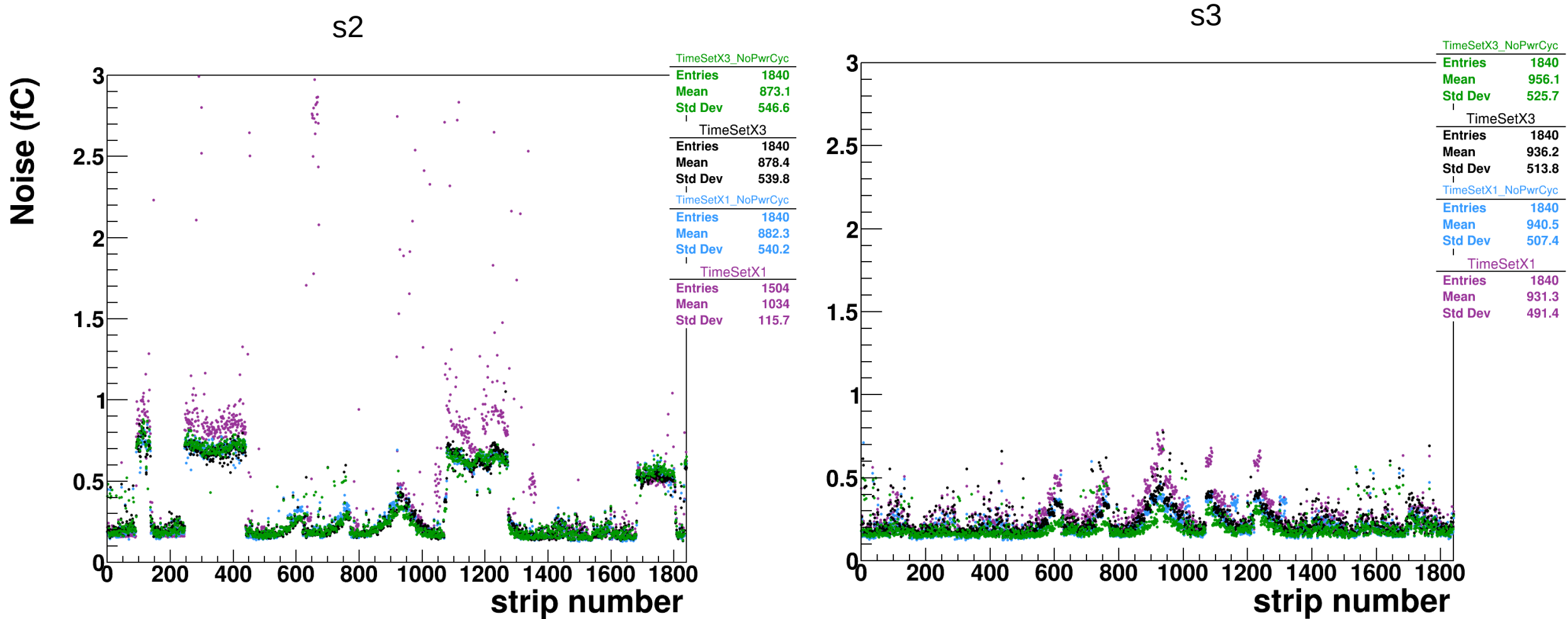
k11



# Investigating power pulsing (Noise vs strip number)



# Investigating power pulsing (Noise vs strip number)



# Investigating power pulsing (Noise vs strip number)

