# LED Monitoring Update Calorimetry Meeting

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August 20, 2020



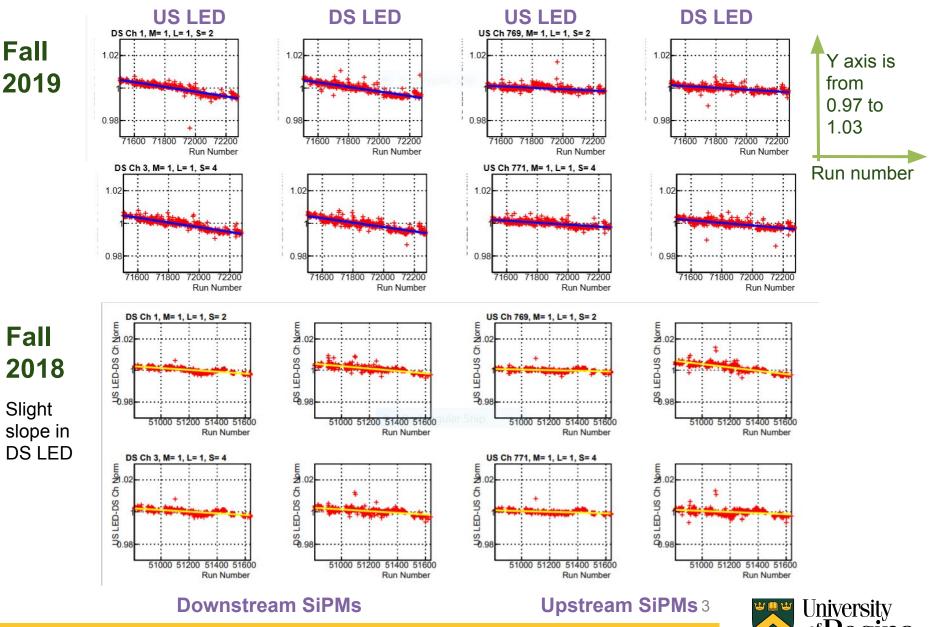
# Motive

We observed slopes in plots for fall 2019 motivating us to look back:

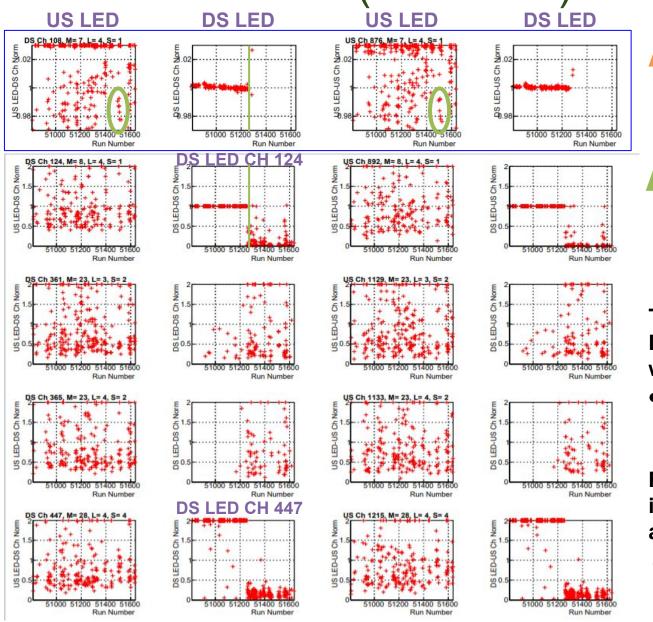
- •Check for other run periods
- •Create plots for fall 2018 run period (Run No. 50810-51638)
  - Fit plot to observe slope
  - Make sure everything is working properly



## **Normal Plots**



## LED fluctuations (Fall 2018)



0 to 2 Trends seen in the DS LEDs of Ch 124 and 447

Blue Box

[set]

#### were very common

**Y** Axis

0.97 to

**Y** Axis

1.03

 Fluctuations in DS LEDs are more common

Fluctuations are similar in corresponding US and DS LED

Issue with LED

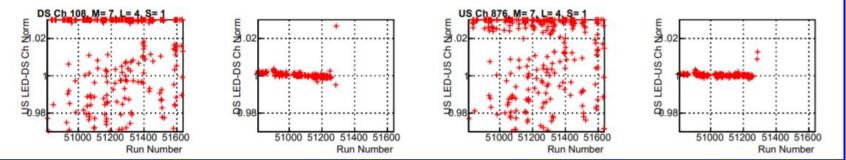
4



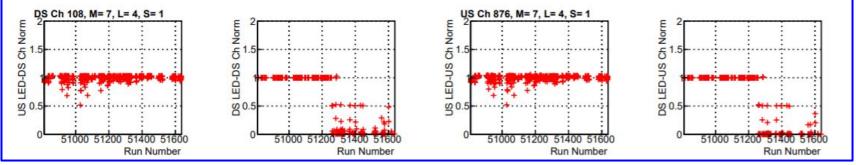
**Upstream SiPMs** 

#### **Downstream SiPMs**

## Set (zoomed in)



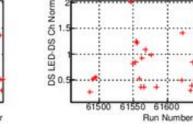
### Set (zoomed out)

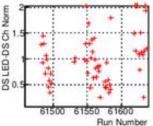


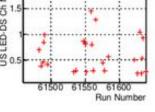
- 243 sets of plots had issue with DS LED
- 11 sets had issue with US LED
- 9 sets had issue with DS and US LED

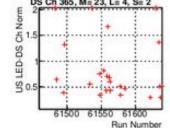
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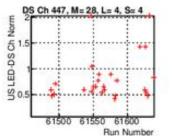
#### **Spring 2019 (64 runs)** DS Ch 124, M= 8, L= 4, S= 1 Norm Ch Nor 5 Black box LED-DS LED-DS [single channel] \$0. 80. 100 61500 61550 61600 61500 61550 61600 Run Number Run Number DS Ch 361, M= 23, L= 3, S= 2 NSLED-DS Ch Norm Norm 5 DSLED-DS ( 61500 61550 61600 61500 61550 61600 Run Number Run Number DS Ch 365, M= 23, L= 4, S= 2



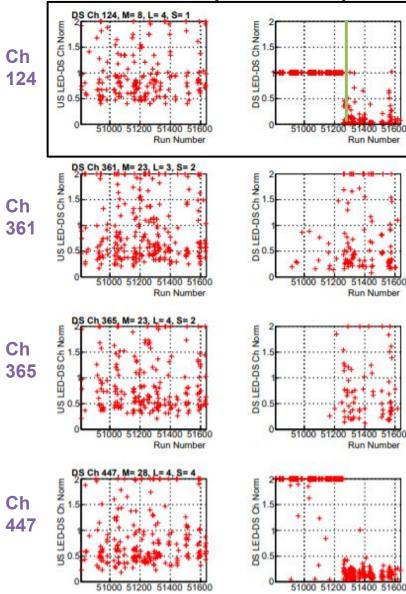




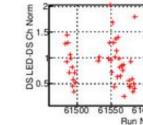




## Fall 2018 (402 runs)



University of Re

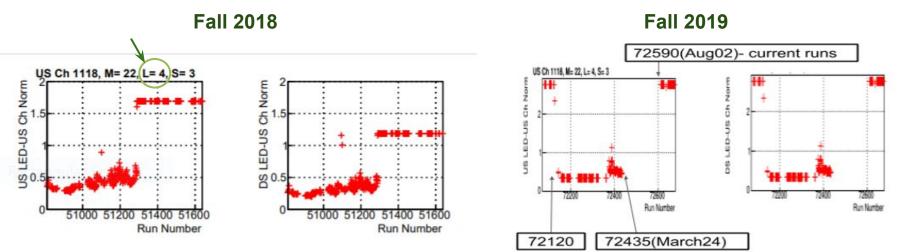


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# Issue with Upstream SiPM

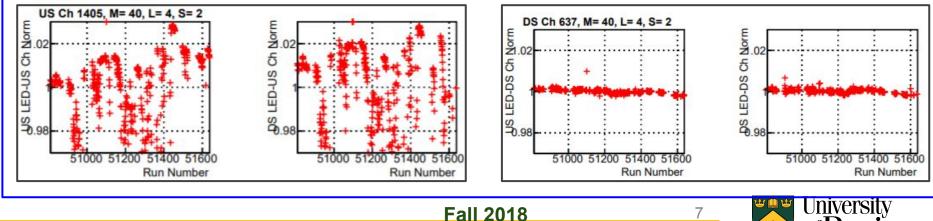
#### Channel 1118

Channel 1405



~ 2% fluctuations

#### Channel 637





# Conclusion

- Channel 1118 and 1405 only channels with SiPM issue
- Fluctuations in LEDs are seen more often in DS LED than US LED
- Plots seem to reinforce fall and spring 2019 data
- Next Step: Examine older run periods?



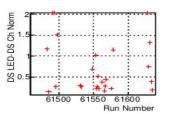
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#### **Backup Slides Spring 2019 (64 runs)** DS Ch 124, M= 8, L= 4, S= 1 US Ch 892, M= 8, L= 4, S= 1 US LED-DS Ch Norm Ε E + Ch Nor Ch Nor ş -·단 1 + LED-DS LED-US LED-US + đ 80. 80. 90. 61500 61550 61550 61500 61550 61500 61550 61600 61600 61500 61600 61600 Run Number Run Number Run Number Run Number DS Ch 361, M= 23, L= 3, S= 2 US Ch 1129, M= 23, L= 3, S= 2 USLED-DS Ch Norm Norm US LED-US Ch Norm DS LED-US Ch Norm 5 + DS LED-DS 4 0 0.4 ## 61500 61500 61550 61600 61550 61600 61500 61550 61600 61500 550 61600 Run Number Run Number Run Number Run Number DS Ch 365, M= 23, L= 4, S= 2 US Ch 1133, M= 23, L= 4, S= 2 Ch Norm Ch Norm US LED-DS Ch Norm LED-US Ch Norm LED-DS ( LED-US ( + ++ S 0. 90. S0.5 ++ 61500 61500 61550 61600 61550 61600 61500 61550 61500 61550 61600 61600 Run Number Run Number Run Number Run Number DS Ch 447, M= 28, L= 4, S= 4 US Ch 1215, M= 28, L= 4, S= 4, US LED-DS Ch Norm LED-US Ch Norm US LED-US Ch Norm + PoN + DS LED-DS Ch 1 ++ + 44 BSI э. 0. + 61500 61550 61600 61500 61550 61600 61500 61550 61600 61500 61550 61600 Run Number Run Number Run Number Run Number DS Ch 622, M= 39, L= 4, S= 3 US Ch 1390, M= 39, L= 4, S= 3 US LED-DS Ch Norm LED-US Ch Norm

S0.

#

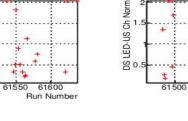
61500



61500

61550

61600 Run Number



61550

61600

Run Number 9



## **Backup Slides**

US LED-DS Ch Nor

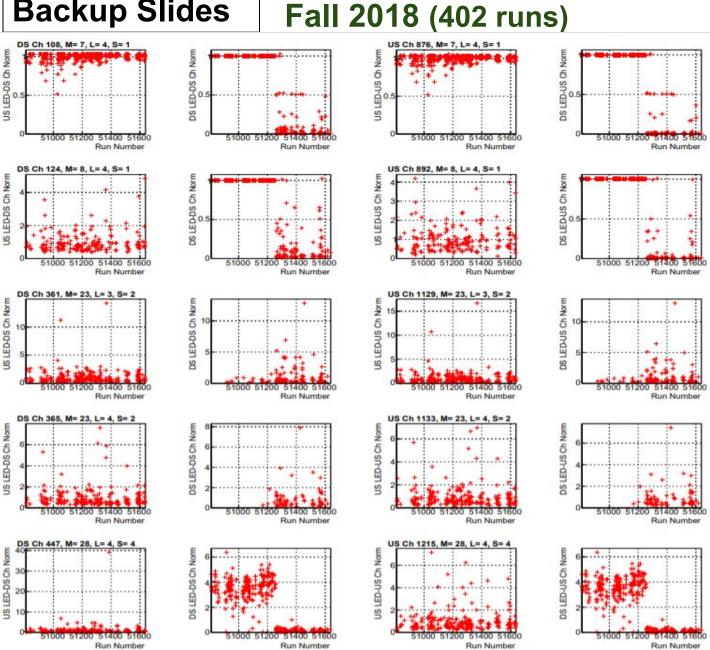
US LED-DS Ch Nor

US LED-DS Ch Non

Norm

LED-DS Ch

S





### **Backup Slides**

### Fall 2018 - Ch 1405 (unzoomed)

