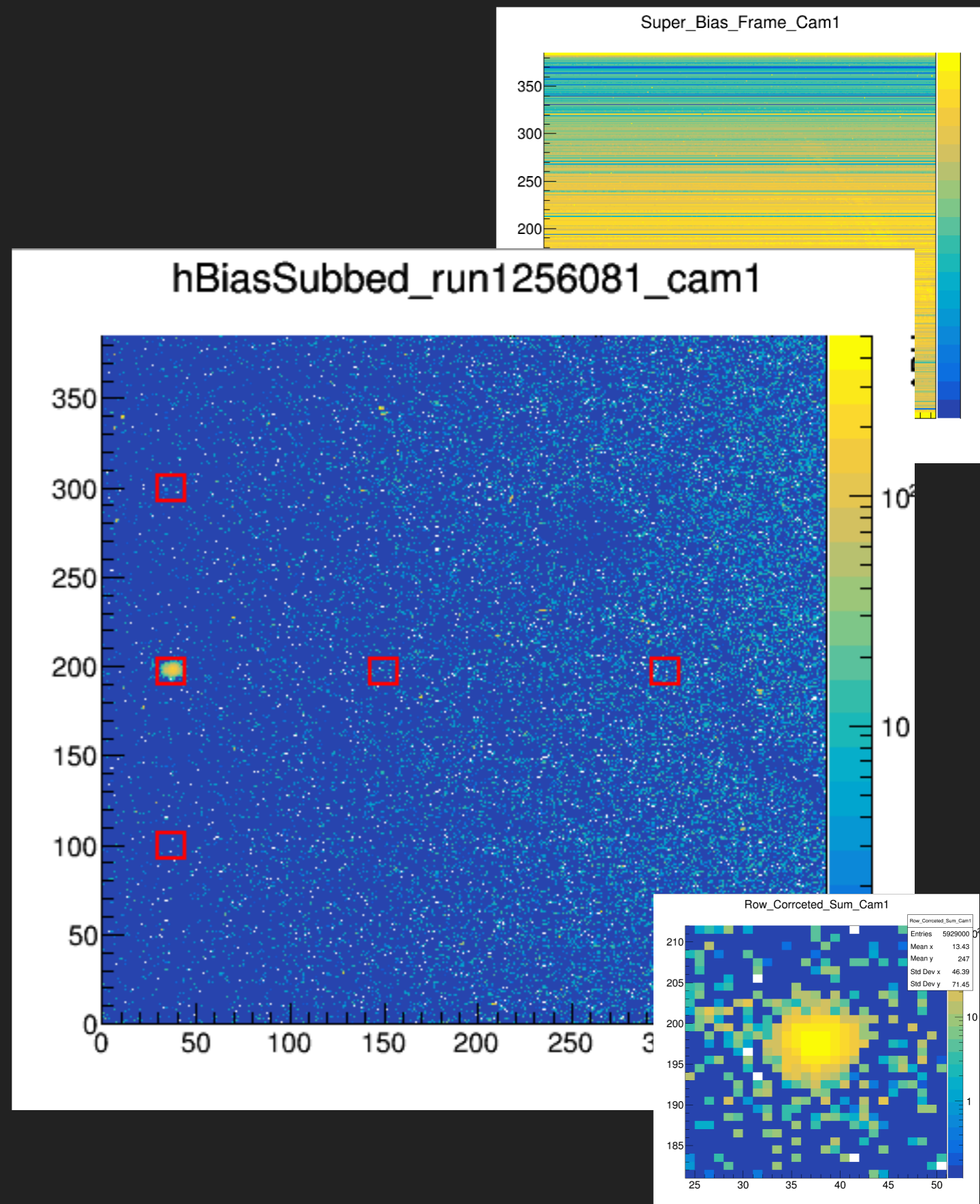ZACHARY CHEN-WISHART 03/02/2020

LIGHT SUM SQUARE

THE ABBEY PLOT

▸ I have made super bias frames (from all runs taken that day)

▸ The sources are nice and bright and I have run over them

▸ However, there is a large gradient in the image…

▸ This needs to be dealt with before this plot can be made

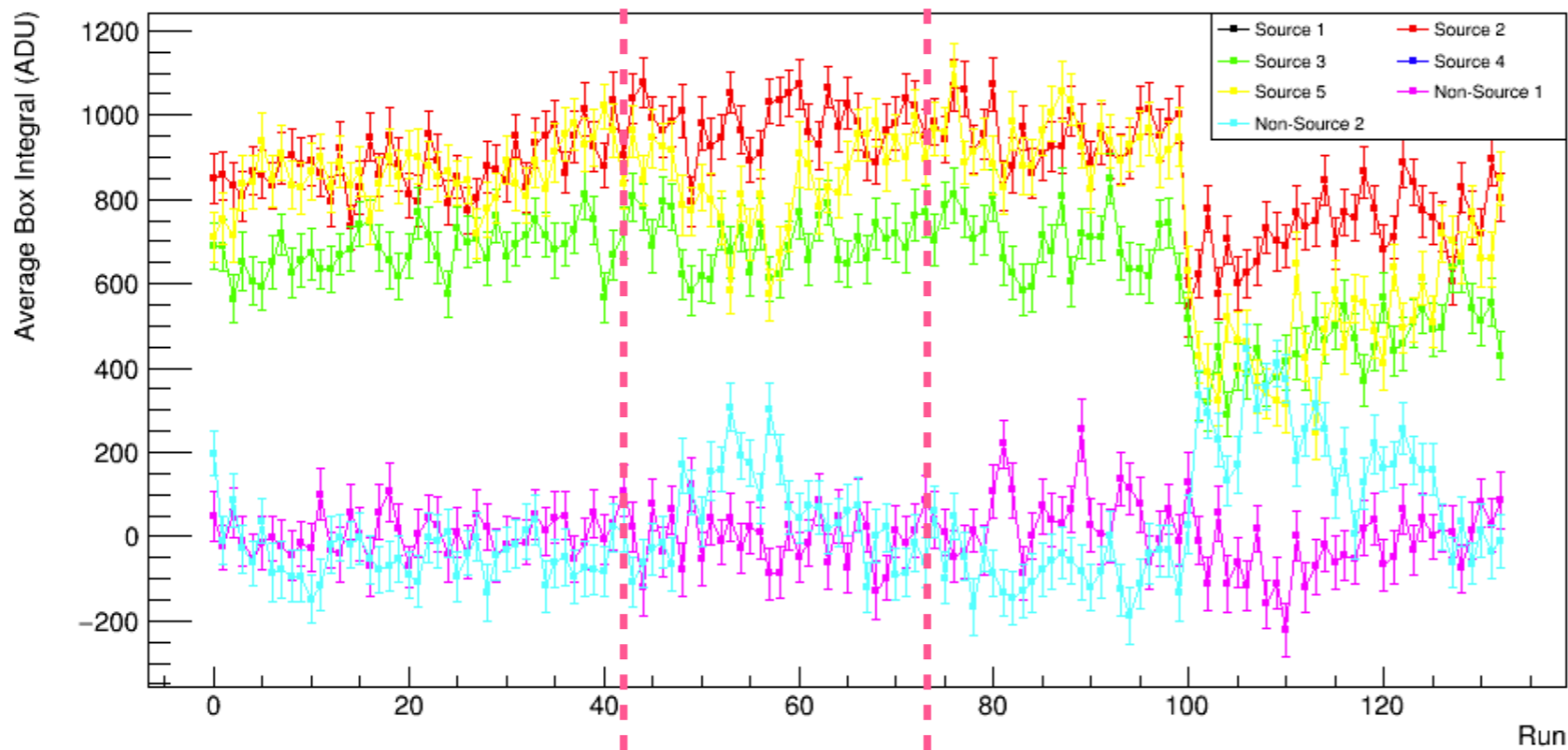▸ NOTE: Found error in SK when using multiple super bias frames

LIGHT SUM SQUARED

▸ LSS code currently in a very good spot

▸ Row correction working very well

▸ However, non-standard light leak in data (seems to be in bias frames also…)

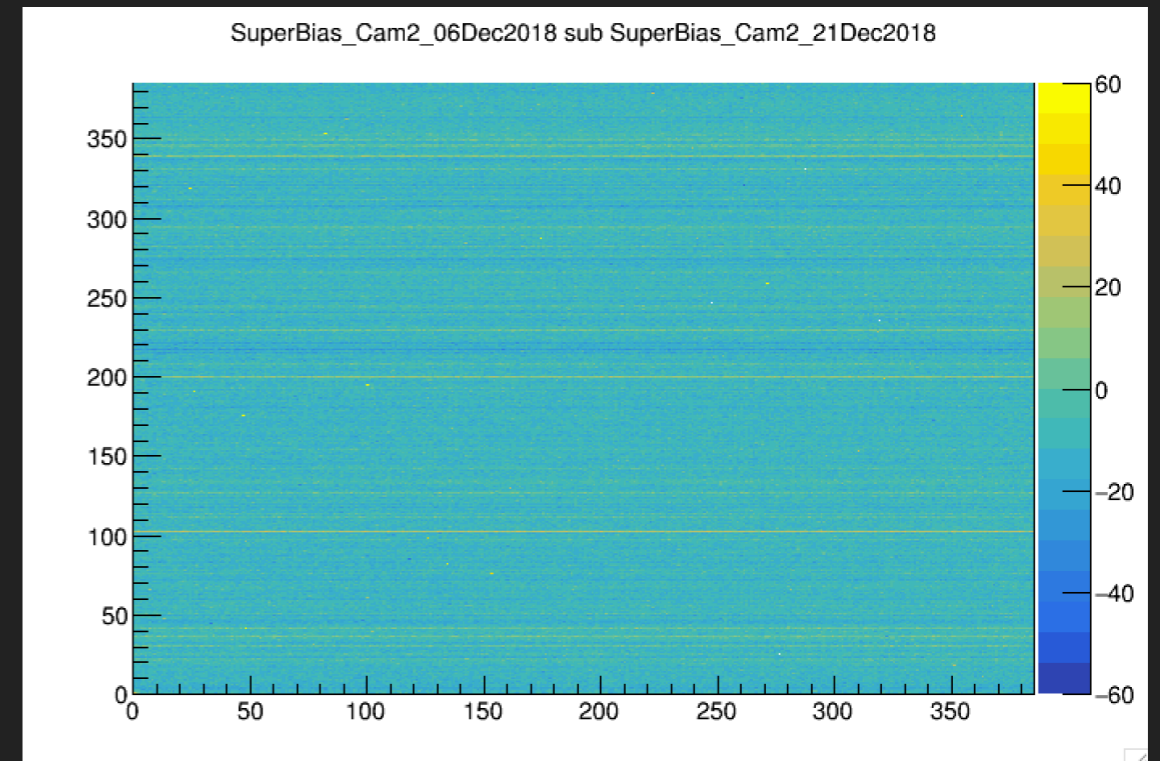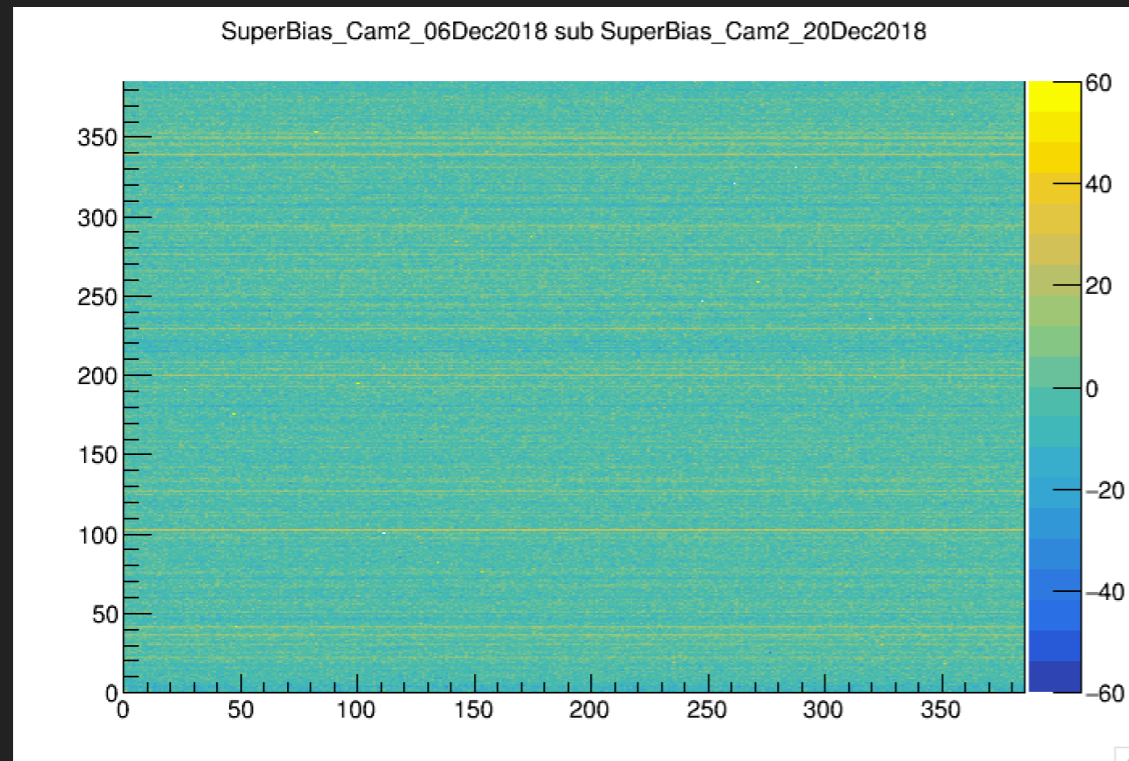Camera_2-Averaged_Box_Integral_vs_Run — **3 SUPER BIAS FRAMES**
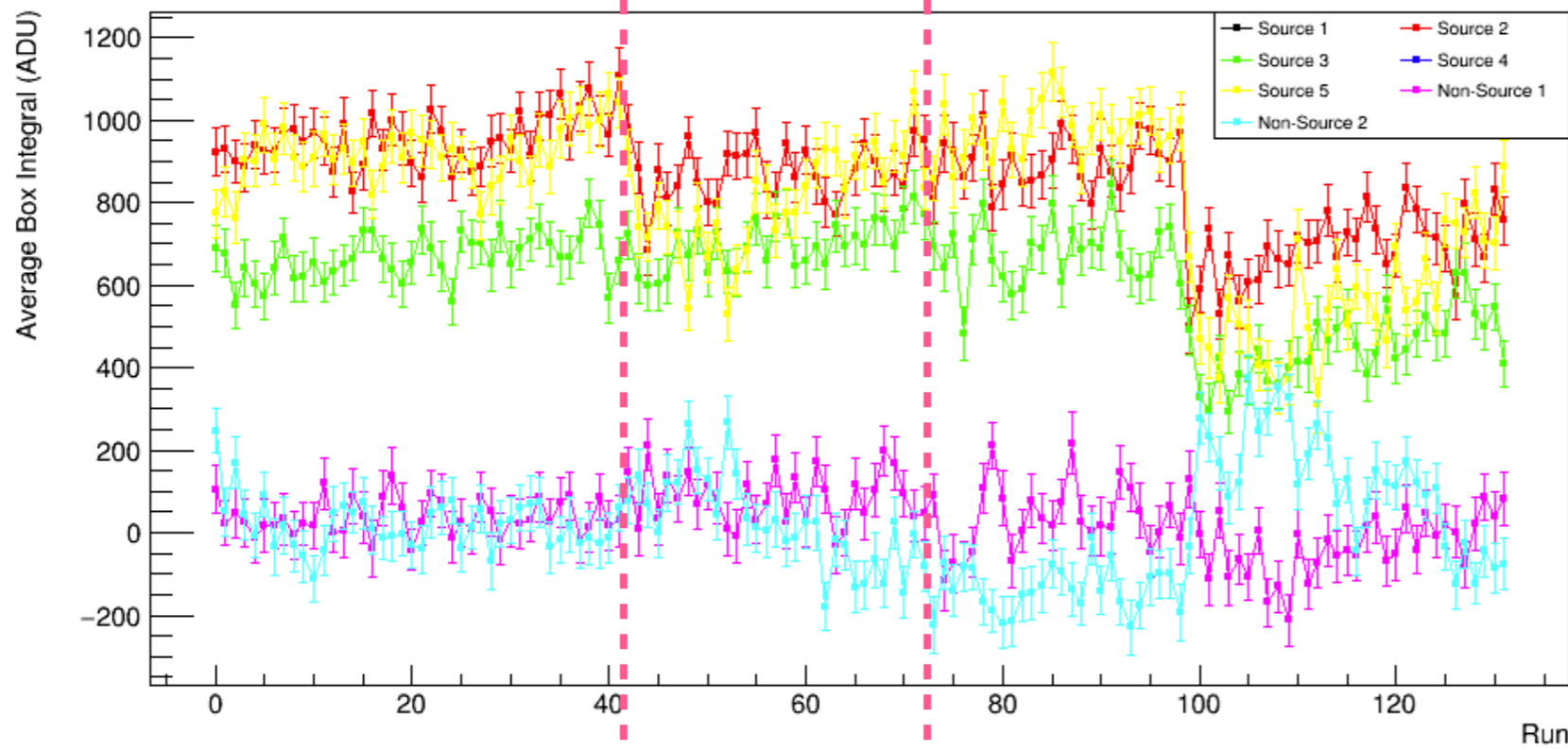
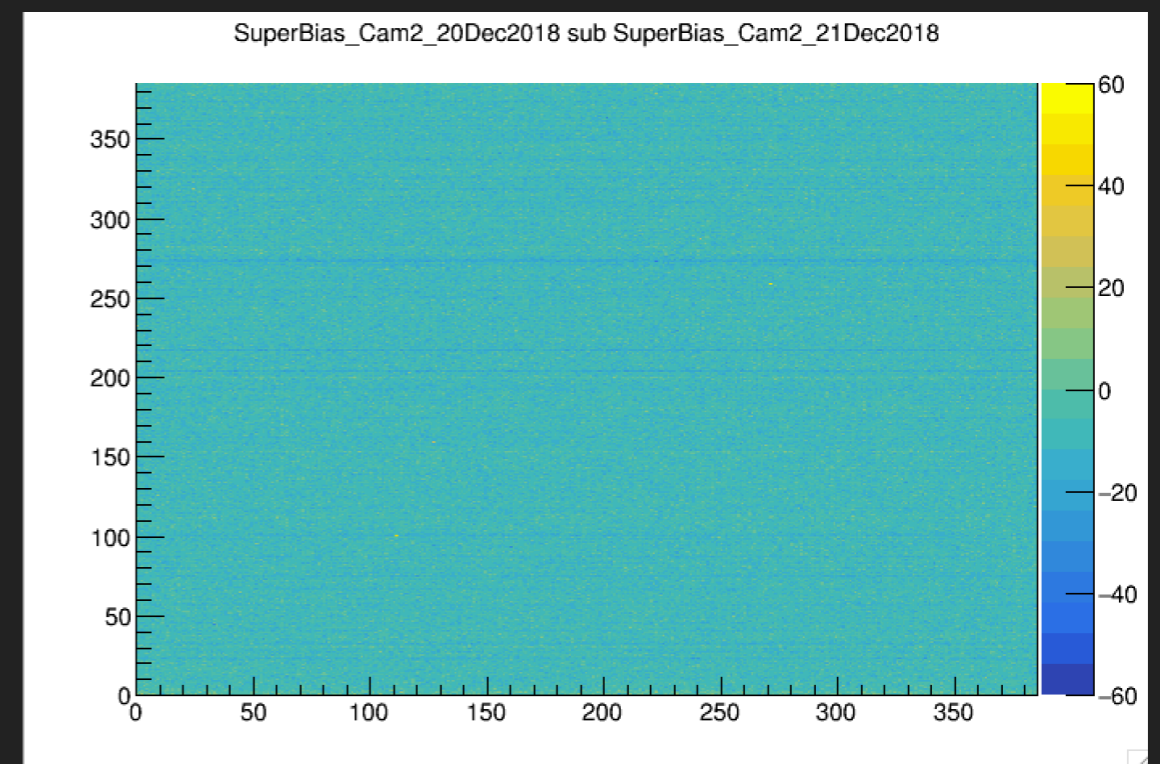Camera_2-Averaged_Box_Integral_vs_Run — **1 SUPER BIAS FRAME**

- This set of runs is taken over three separate days, the 6th, 20th and 21st of Dec 2018

- The above plot uses three separate super bias frames, each one only using the bias frames from one of the days. It also uses row pedestal jump correction

- The below plot uses only one combined super bias frame using bias frames from all three days & row pedestal jump correction

- Iff the only difference between bias frames on different days is row pedestal jumps these two plots should look identical. They do not.
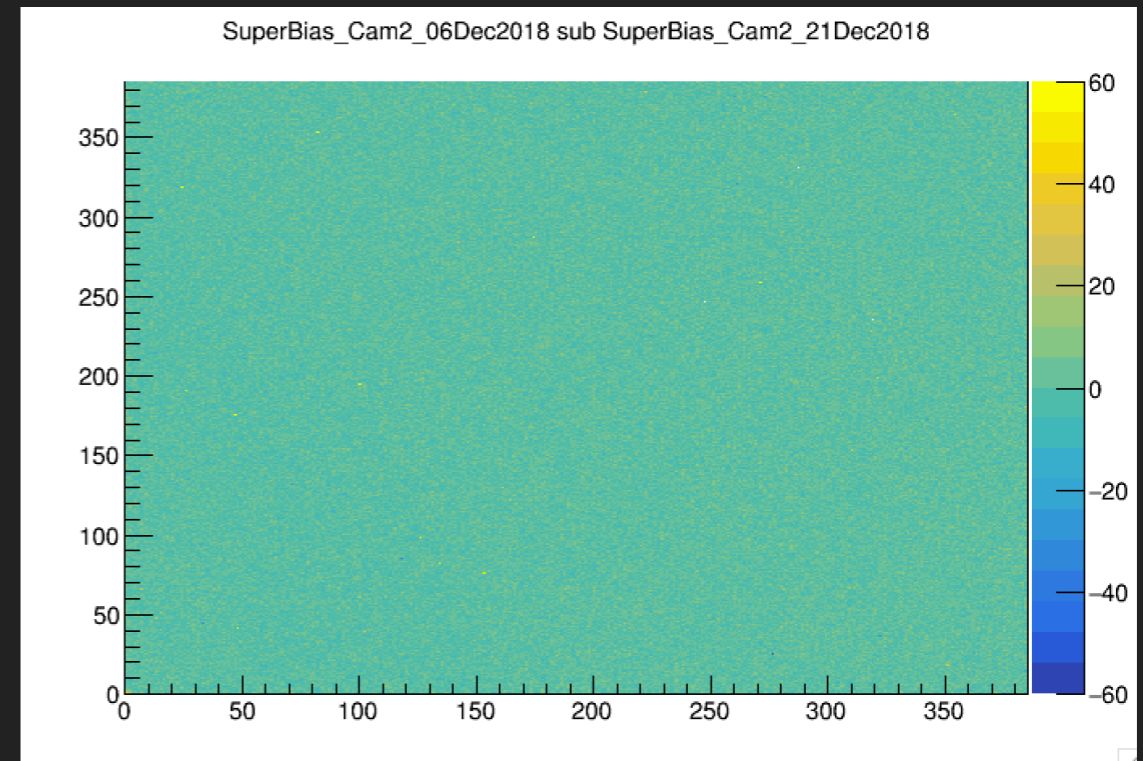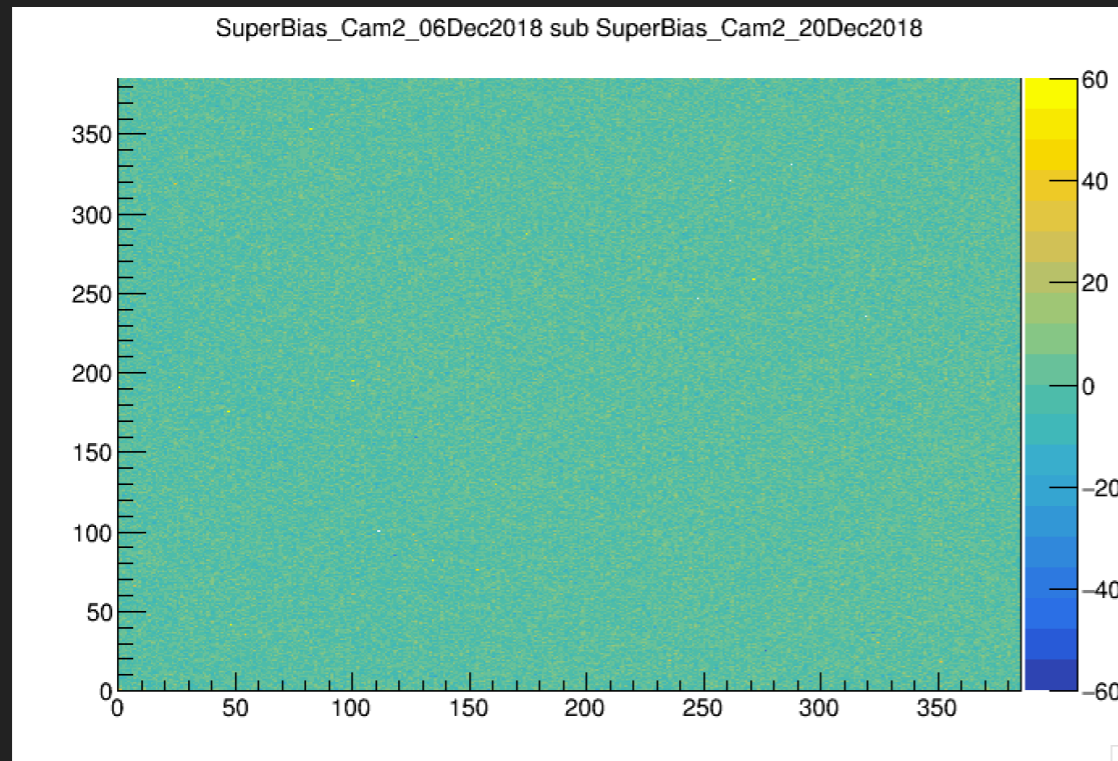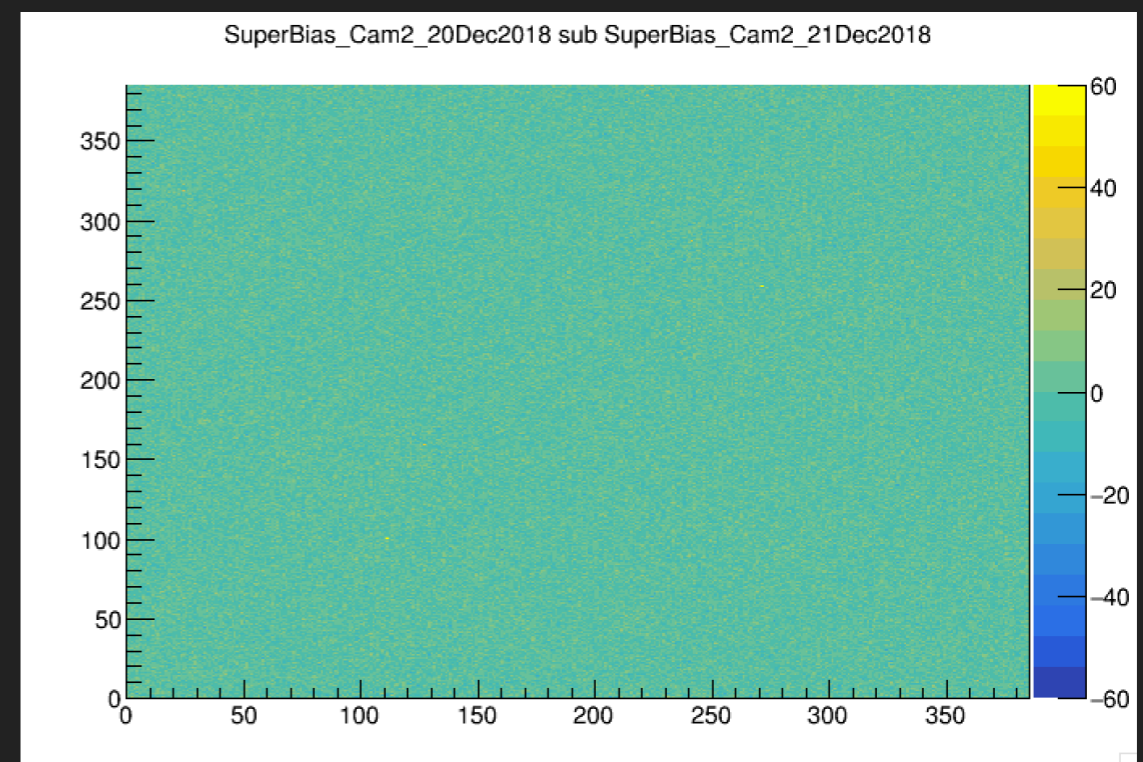
SUPER BIAS FRAME SUB SUPER BIAS FRAME

SuperBias_Cam2_06Dec2018 sub SuperBias_Cam2_20Dec2018

SuperBias_Cam2_06Dec2018 sub SuperBias_Cam2_21Dec2018

SuperBias_Cam2_20Dec2018 sub SuperBias_Cam2_21Dec2018

▸ Here we can see the following super bias frame subtractions:

  ▸ Dec06-Dec20

  ▸ Dec06-Dec21

  ▸ Dec20-Dec21

▸ We can see that to first order the subtractions differ in stripes due to row jumps. This needs close examinations to determine what other, if any corrections are needed.
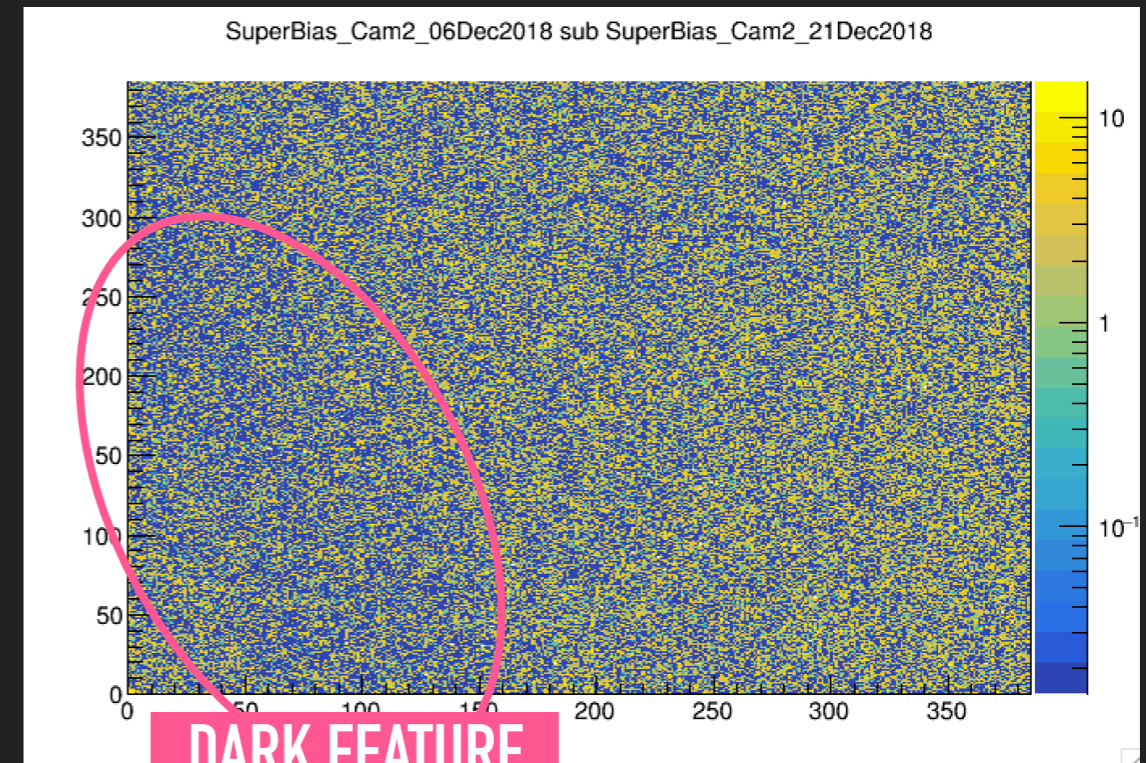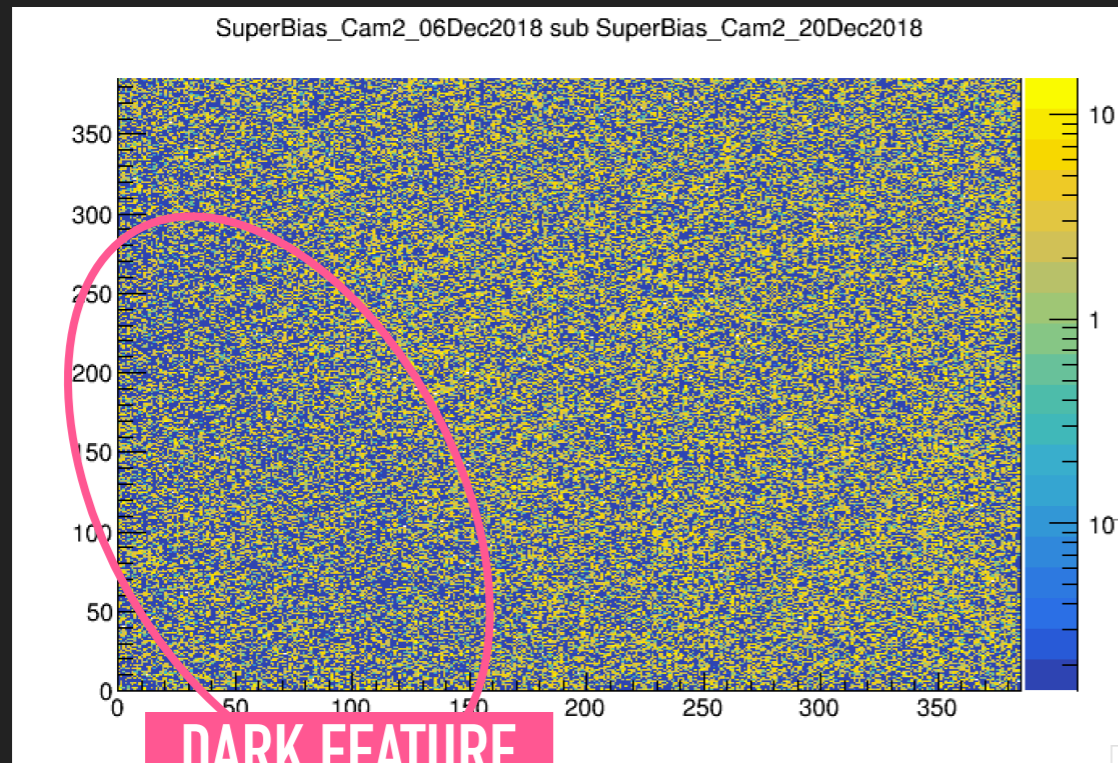
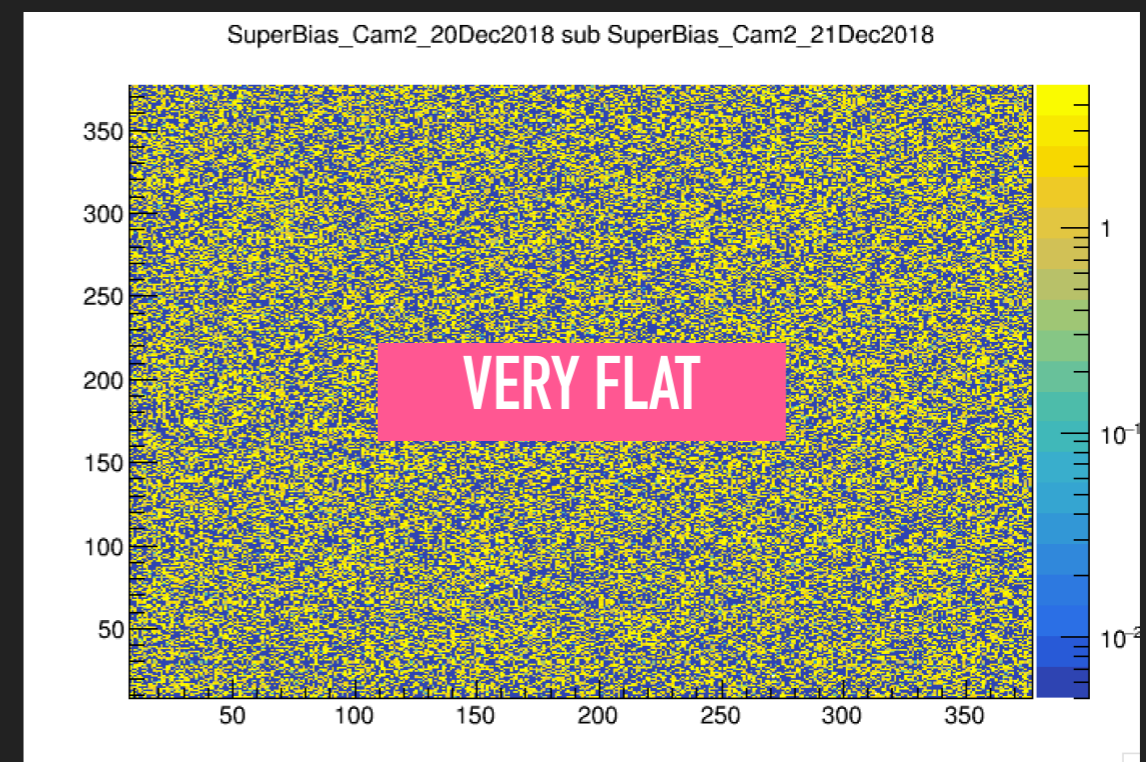# SUPER BIAS FRAME SUB SUPER BIAS FRAME – ROW CORRECTED!!!!

SuperBias_Cam2_06Dec2018 sub SuperBias_Cam2_20Dec2018

SuperBias_Cam2_06Dec2018 sub SuperBias_Cam2_21Dec2018

- ‣ Here we can see the following super bias frame subtractions:

    - ‣ Dec06-Dec20 - Row Corrected

    - ‣ Dec06-Dec21 - Row Corrected

    - ‣ Dec20-Dec21 - Row Corrected

- ‣ We can see that the row correction applied to the super bias frames before subtraction remove the first order differences i.e. row jumps

SuperBias_Cam2_20Dec2018 sub SuperBias_Cam2_21Dec2018

LET'S HAVE A CLOSER LOOK FOR NEXT ORDER ISSUES....

SuperBias_Cam2_06Dec2018 sub SuperBias_Cam2_20Dec2018

DARK FEATURE

SuperBias_Cam2_06Dec2018 sub SuperBias_Cam2_21Dec2018

DARK FEATURE

SuperBias_Cam2_20Dec2018 sub SuperBias_Cam2_21Dec2018

VERY FLAT

▸ Here we can see the following super bias frame subtractions:

  ▸ Dec06-Dec20 - Row Corrected

  ▸ Dec06-Dec21 - Row Corrected

  ▸ Dec20-Dec21 - Row Corrected

▸ We can see that the row correction applied to the super bias frames before subtraction remove the first order differences i.e. row jumps
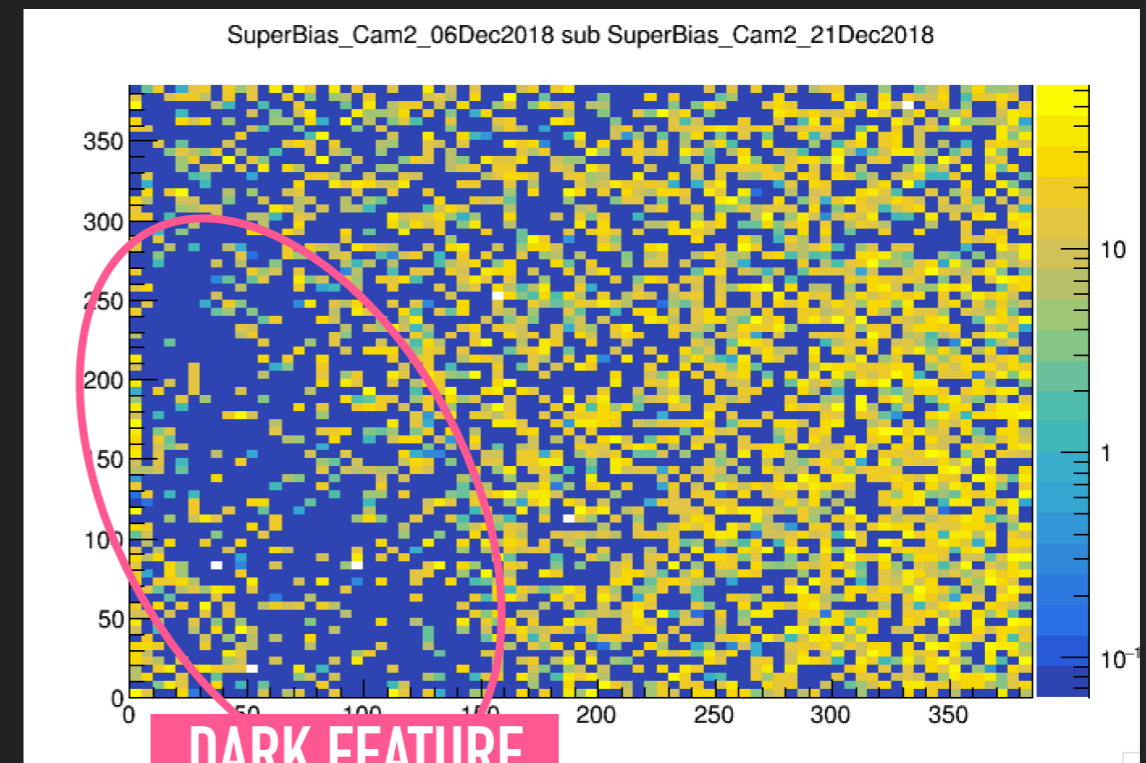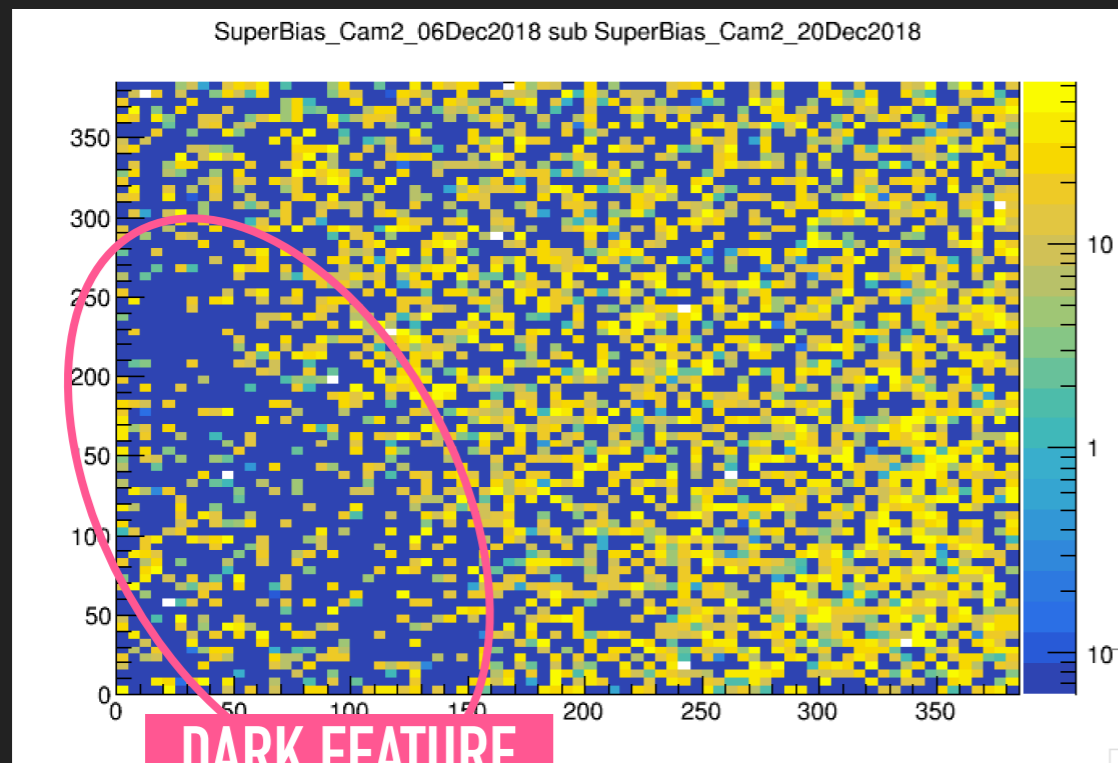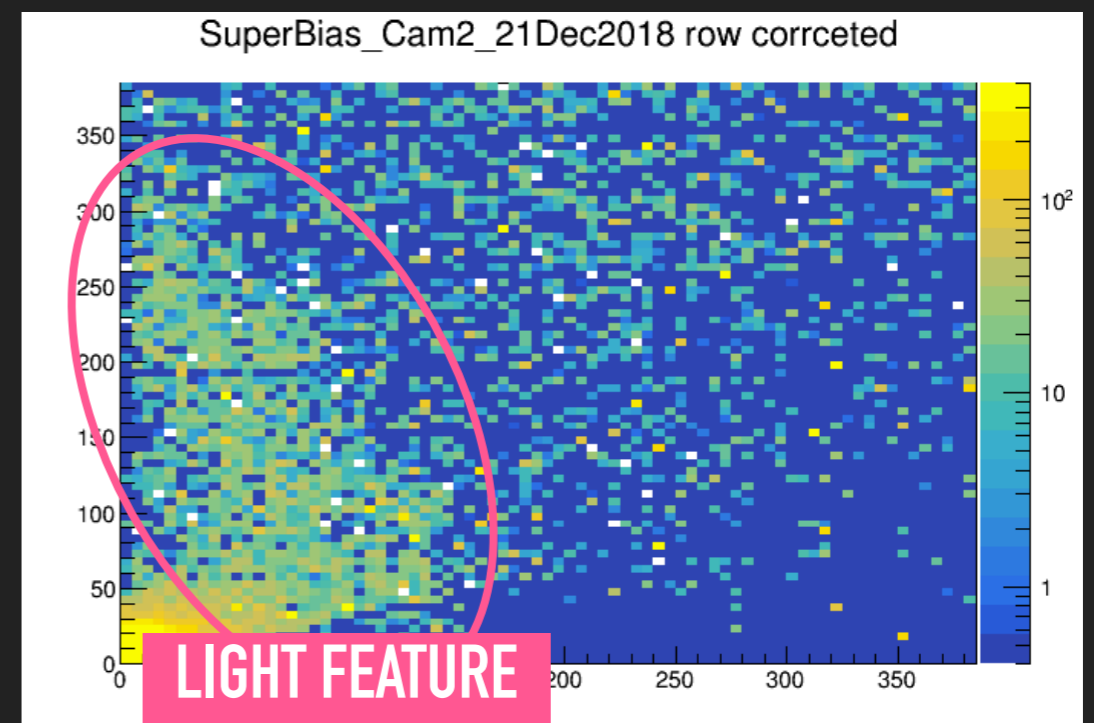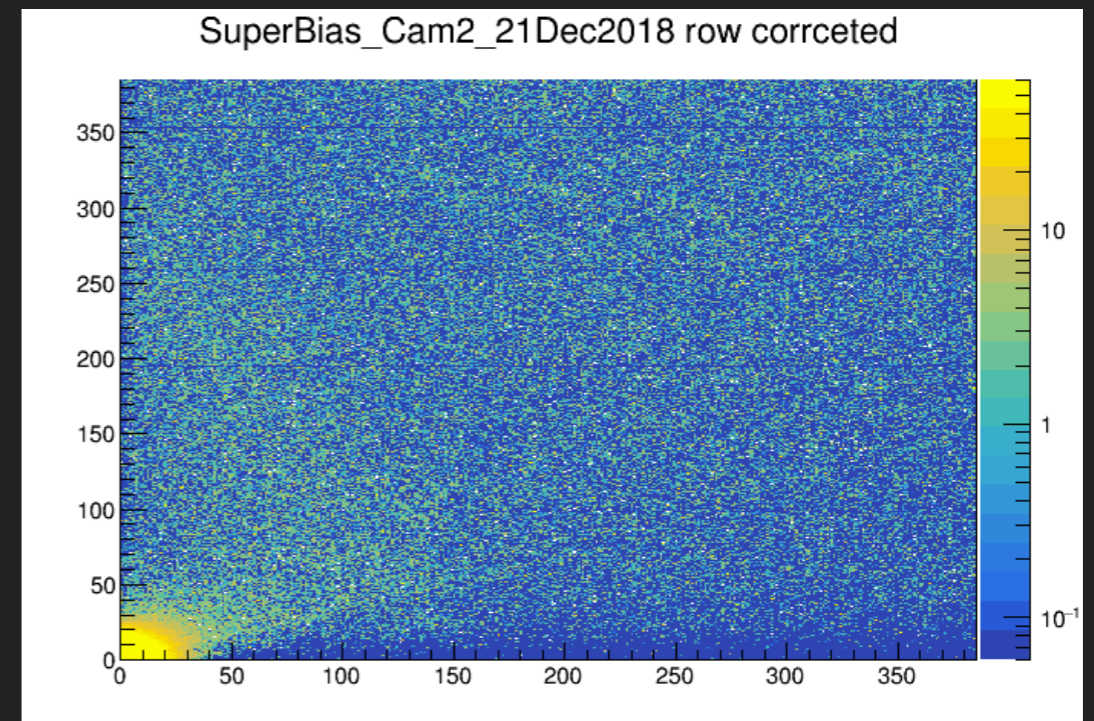
CLOSER LOOK – REBIN & CHANGE LIMITS

SuperBias_Cam2_06Dec2018 sub SuperBias_Cam2_20Dec2018

DARK FEATURE

SuperBias_Cam2_06Dec2018 sub SuperBias_Cam2_21Dec2018

DARK FEATURE

SuperBias_Cam2_20Dec2018 sub SuperBias_Cam2_21Dec2018

VERY FLAT

▸ Here we can see the following super bias frame subtractions:

  ▸ Dec06-Dec20 - Row Corrected

  ▸ Dec06-Dec21 - Row Corrected

  ▸ Dec20-Dec21 - Row Corrected

▸ We can see that the row correction applied to the super bias frames before subtraction remove the first order differences i.e. row jumps
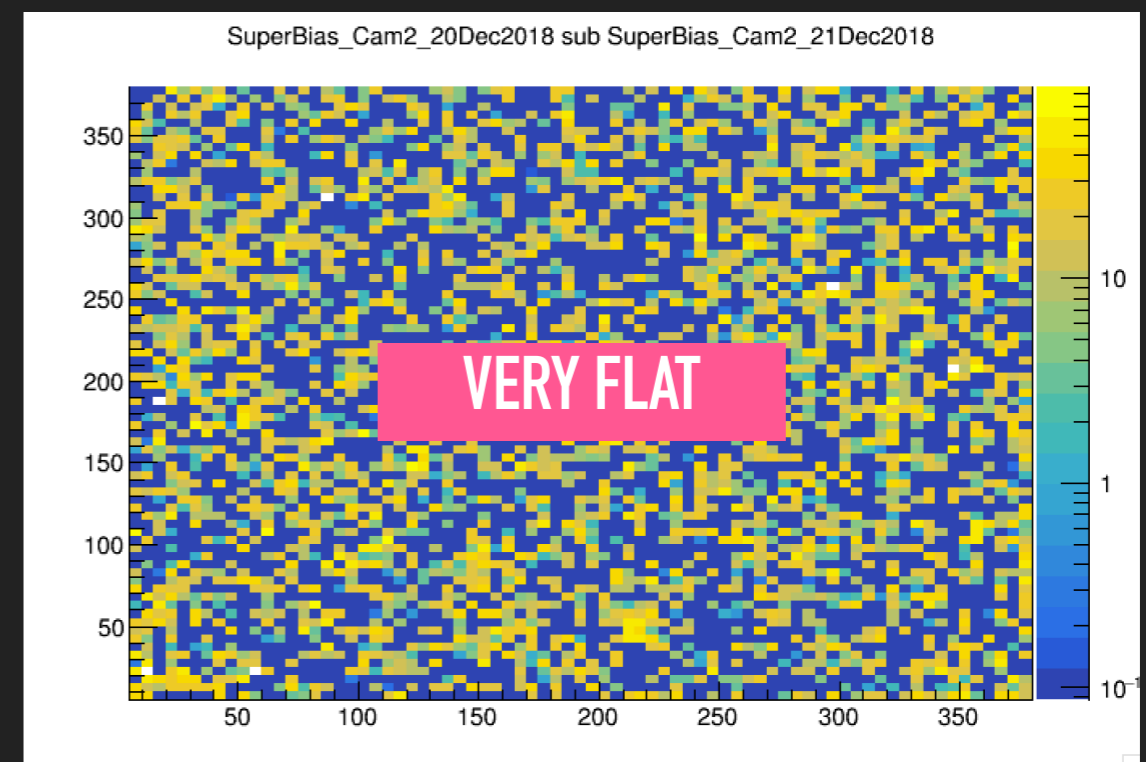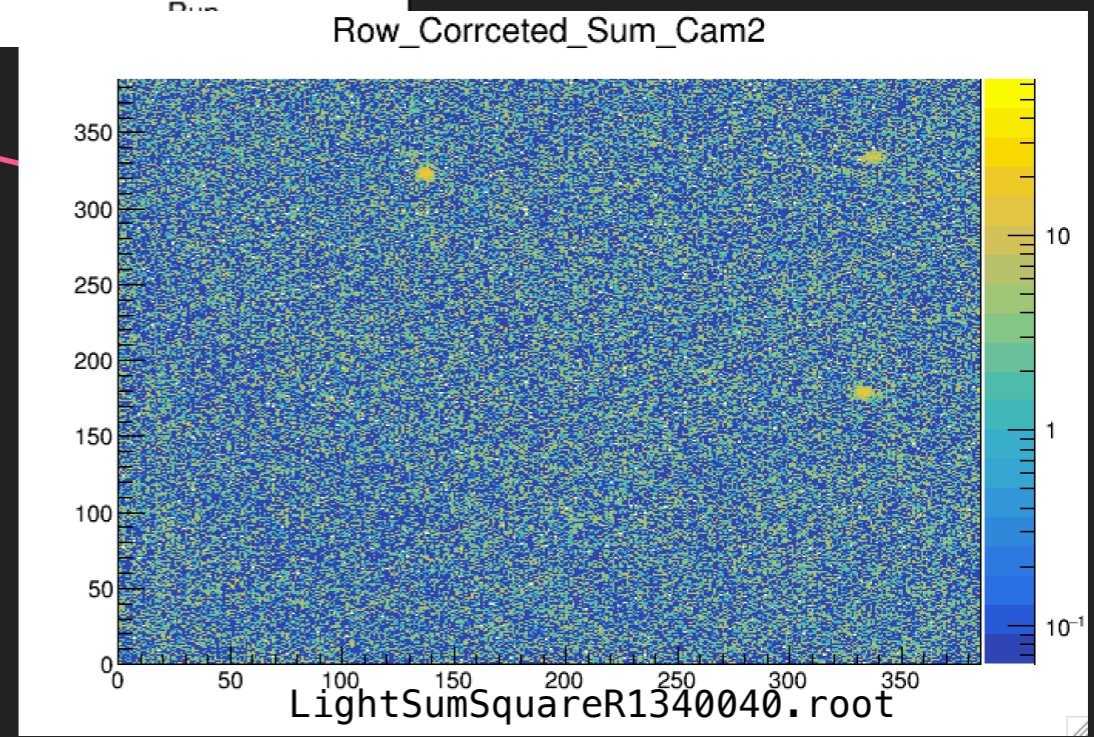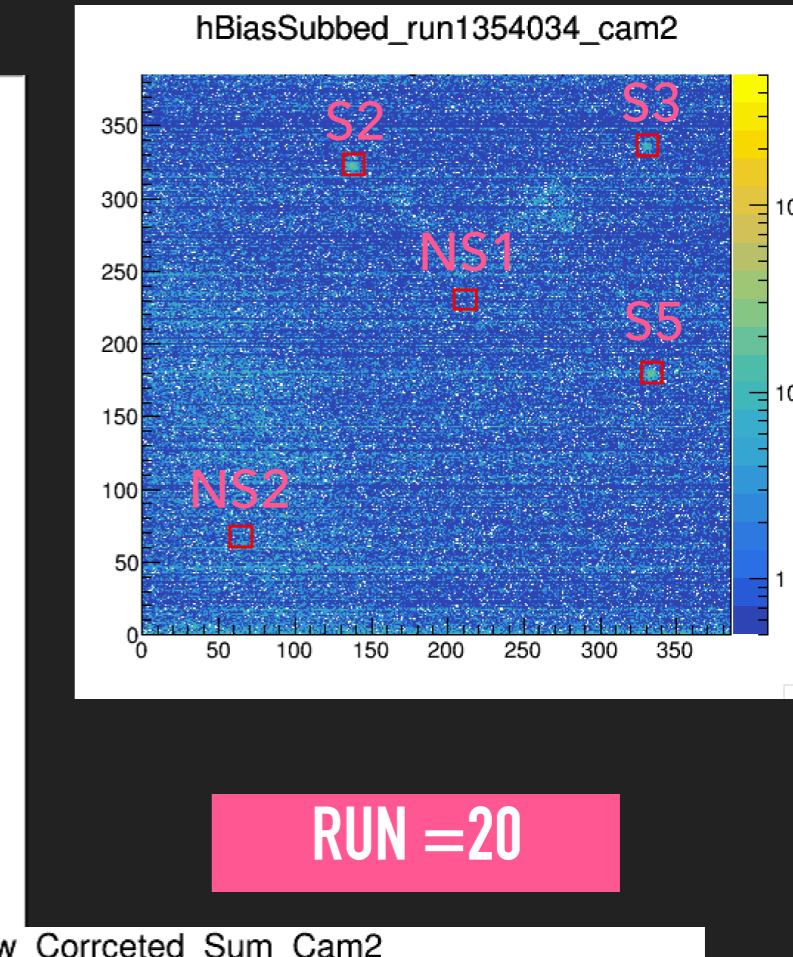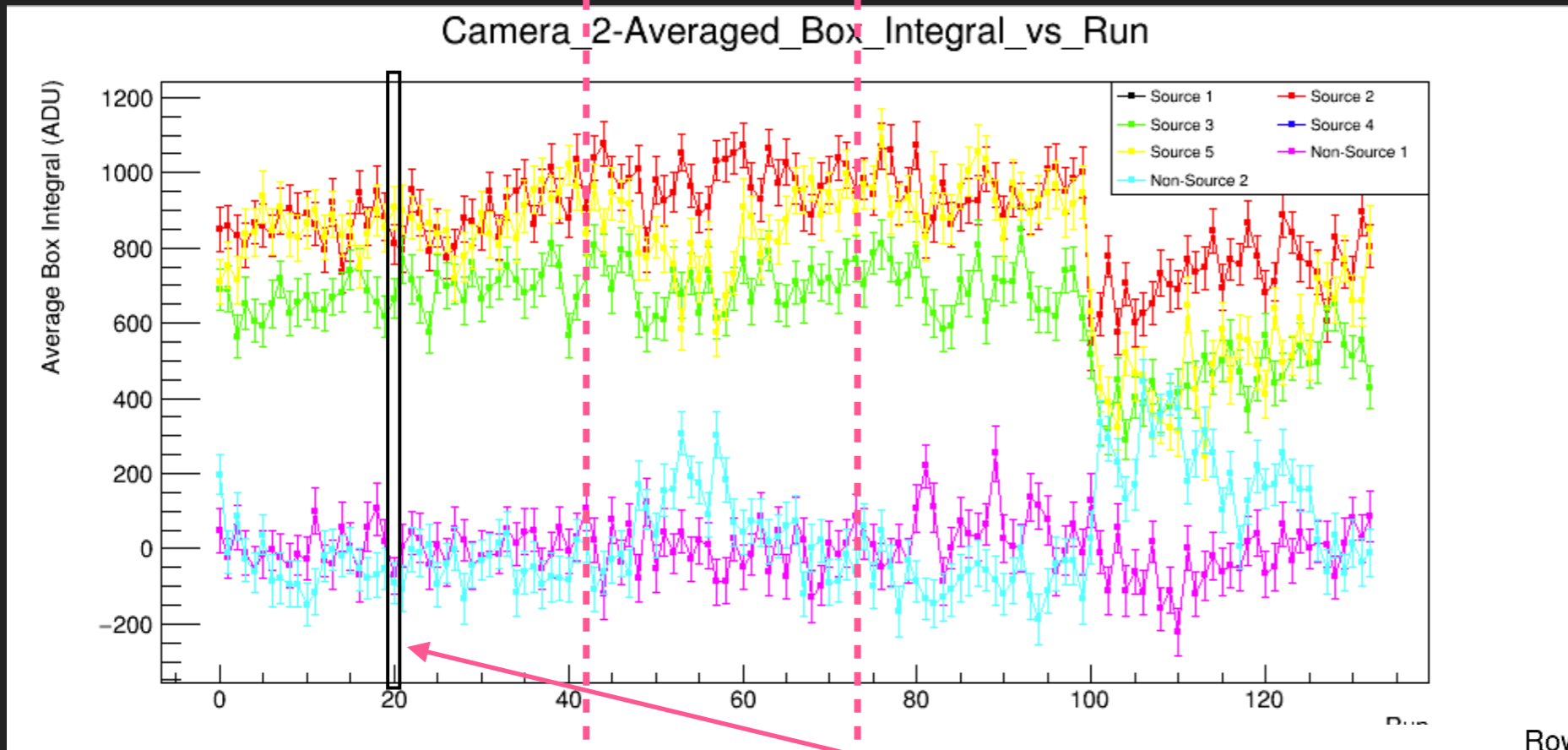
SUPER BIAS FRAME: 21ST OF DEC (ROW CORRECTION APPLIED)

▸ If we take the super bias frame from the 21st of Dec and apply very specific z limits and log(Z) we can see this feature

▸ It become very clear if we rebin

▸ NOTE: Bright corner is meant to be there and is not an issue

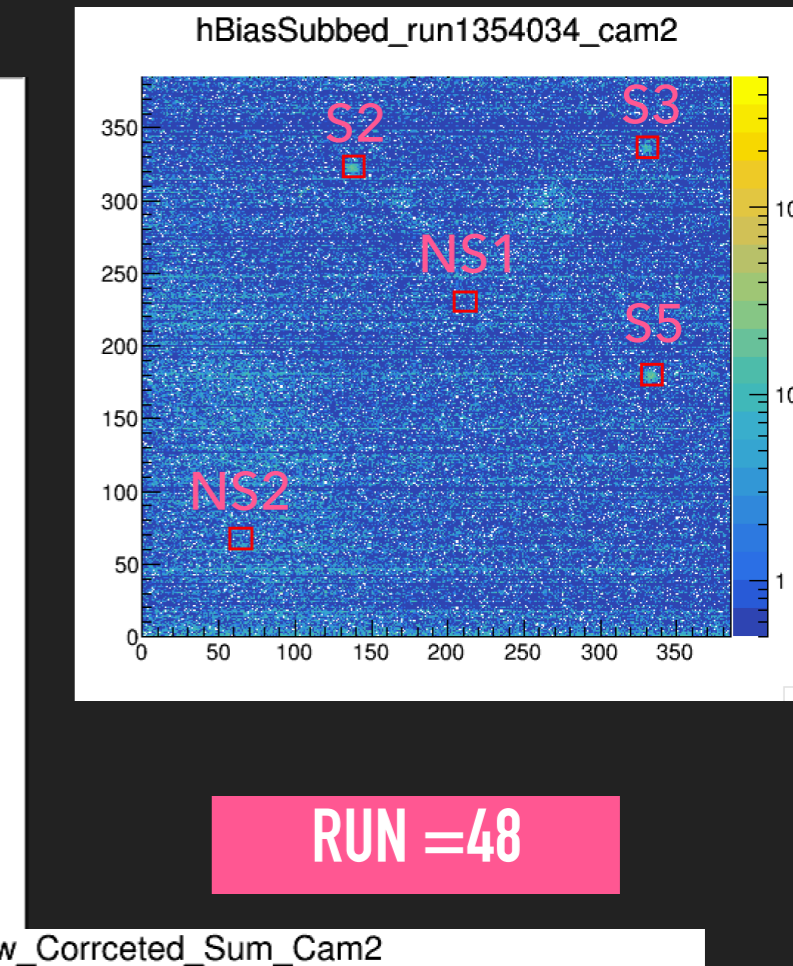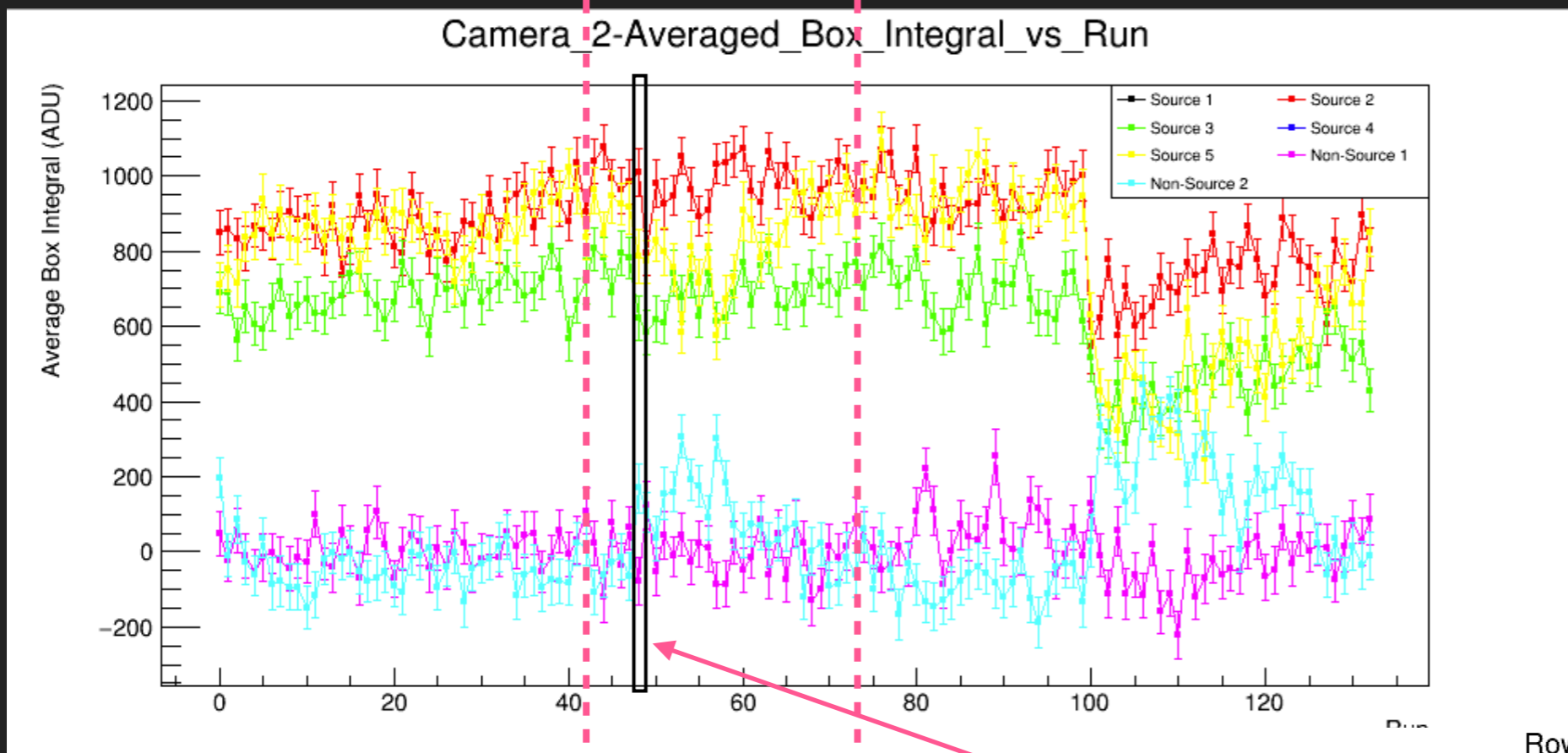▸ So we see we have a bright future in our bias frames from the 21st (and 20th) of December :(

SuperBias_Cam2_21Dec2018 row corrceted

SuperBias_Cam2_21Dec2018 row corrceted

LIGHT FEATURE

BRIGHT FEATURE ALSO IN PHYSICS FRAMES

Camera_2-Averaged_Box_Integral_vs_Run

hBiasSubbed_run1354034_cam2

RUN =20

Row_Corrceted_Sum_Cam2

LightSumSquareR1340040.root

▸ Using single super bias frame analysis

▸ Bright feature transient

▸ Not correlated with voltage or sparking

BRIGHT FEATURE ALSO IN PHYSICS FRAMES

Camera_2-Averaged_Box_Integral_vs_Run

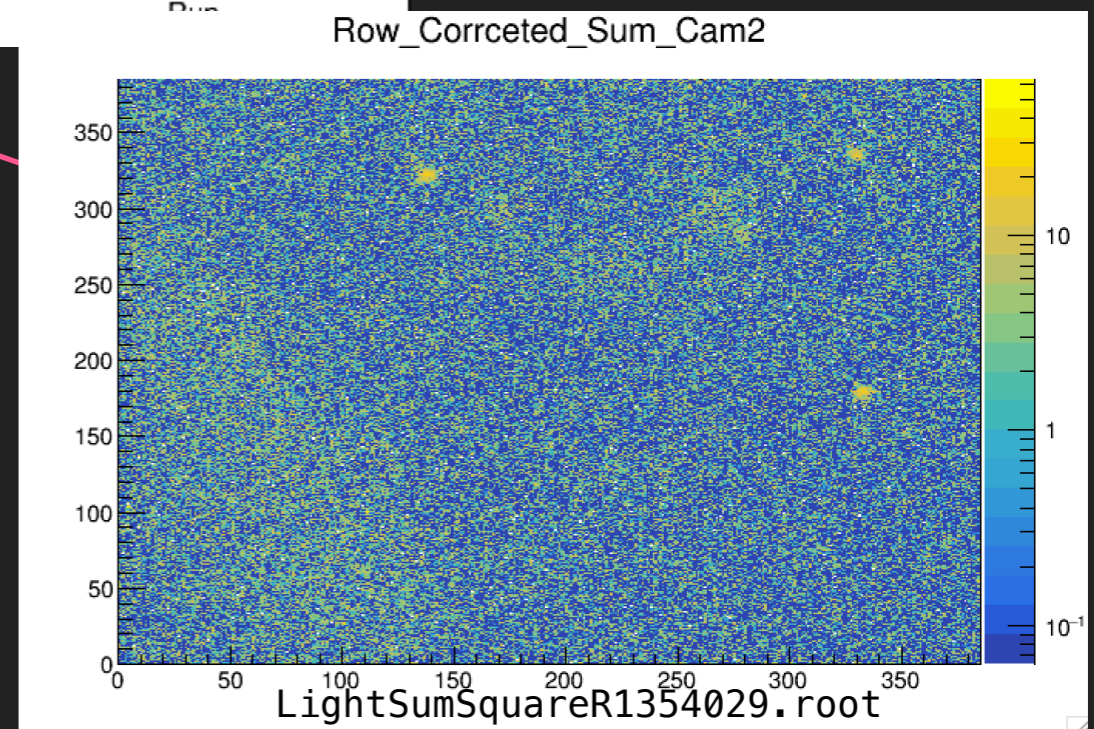hBiasSubbed_run1354034_cam2

RUN =48

- ‣ Using single super bias frame analysis

- ‣ Bright feature transient

- ‣ Not correlated with voltage or sparking

Row_Corrceted_Sum_Cam2

LightSumSquareR1354029.root

BRIGHT FEATURE ALSO IN PHYSICS FRAMES

Camera_2-Averaged_Box_Integral_vs_Run

hBiasSubbed_run1354034_cam2

RUN =53

Row_Corrceted_Sum_Cam2

LightSumSquareR1354034.root

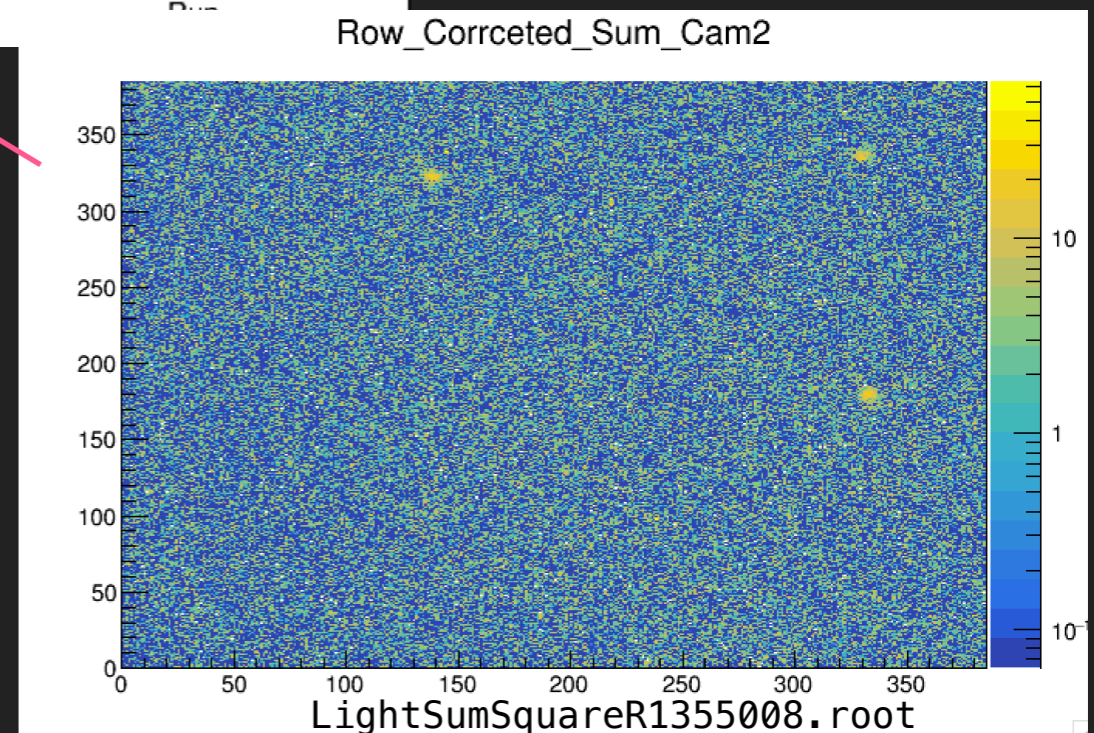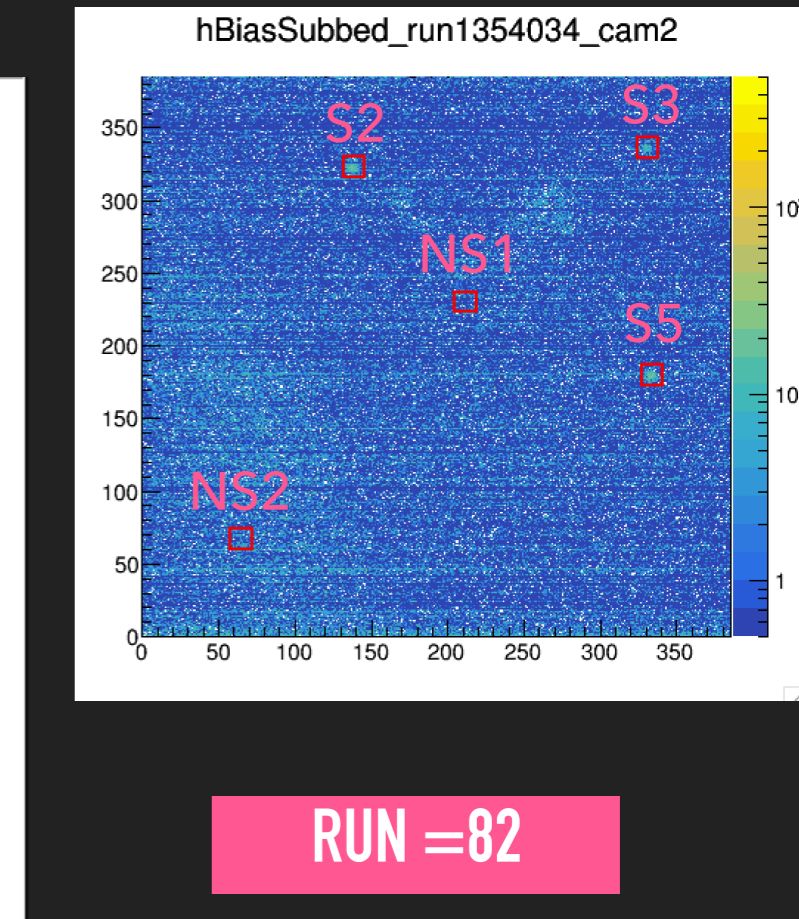▸ Using single super bias frame analysis

▸ Bright feature transient

▸ Not correlated with voltage or sparking

BRIGHT FEATURE ALSO IN PHYSICS FRAMES

Camera_2-Averaged_Box_Integral_vs_Run

hBiasSubbed_run1354034_cam2

RUN =82

Row_Corrceted_Sum_Cam2

LightSumSquareR1355008.root

▸ Using single super bias frame analysis

▸ Bright feature transient

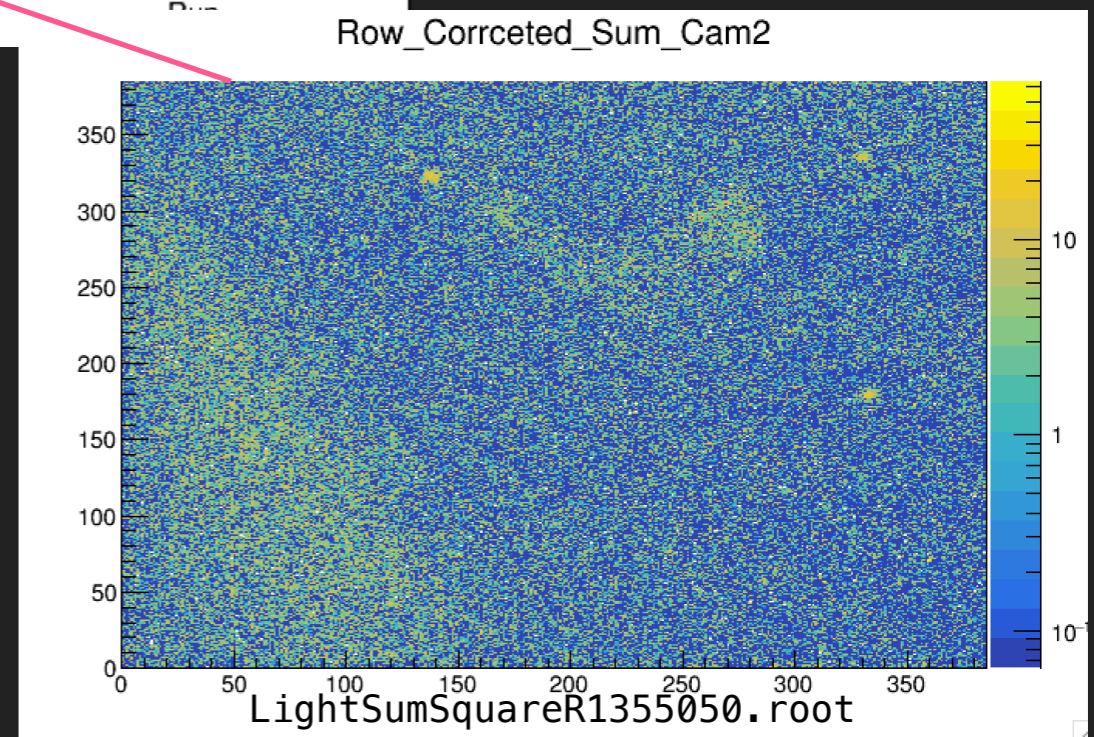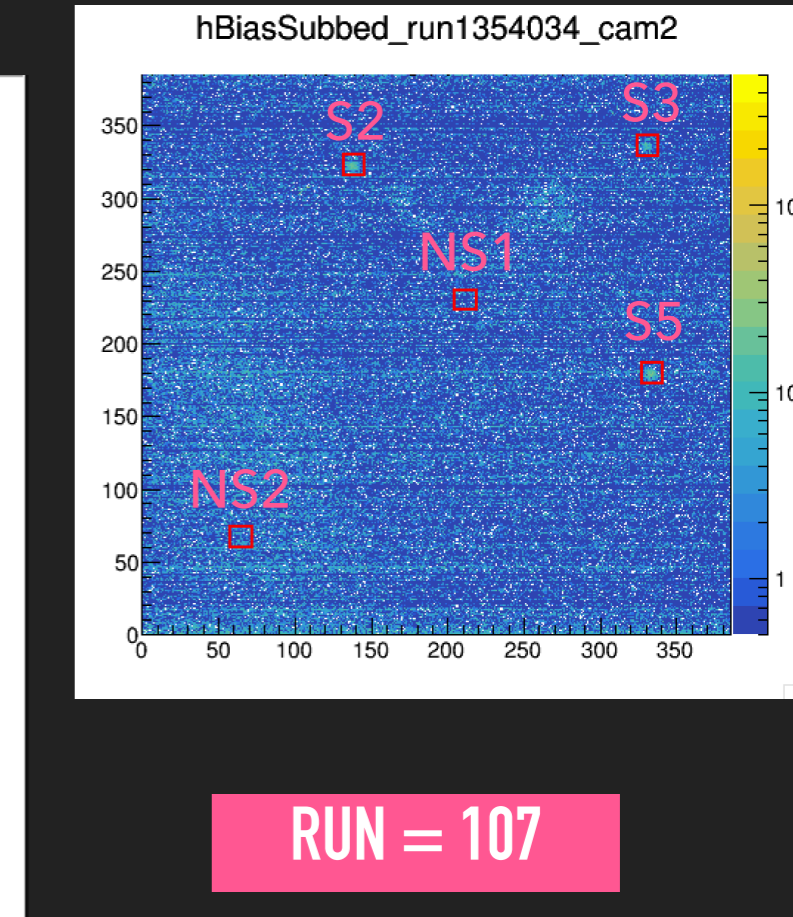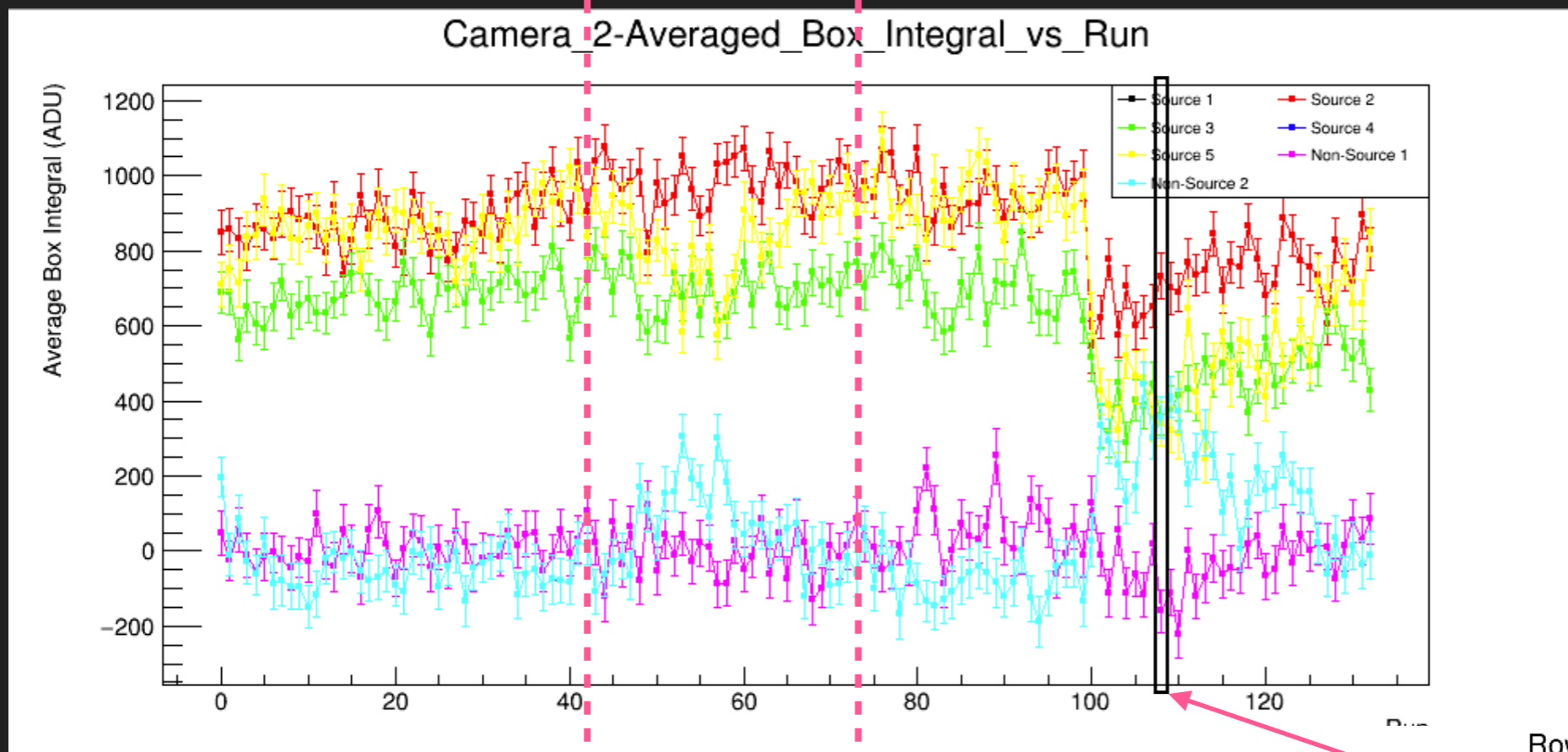▸ Not correlated with voltage or sparking

BRIGHT FEATURE ALSO IN PHYSICS FRAMES

Camera_2-Averaged_Box_Integral_vs_Run

hBiasSubbed_run1354034_cam2

RUN = 107

Row_Corrceted_Sum_Cam2

LightSumSquareR1355050.root

‣ Using single super bias frame analysis

‣ Bright feature transient

‣ Not correlated with voltage or sparking

CONCLUSIONS

▸ We have a light leak that started between the 6th and 20th of December 2018

▸ My hunch is its a light leak though the back of the cam as this could provide a reason that it is found in the bias frames

▸ To me this data is shot :(- Unless anyone has some bright ideas

▸ In short -> we need to start looking at other data…

▸ But code in a good place (Though I can think of one or two things to help running and merging of course)