

ZACHARY CHEN-WISHART 26/02/2019

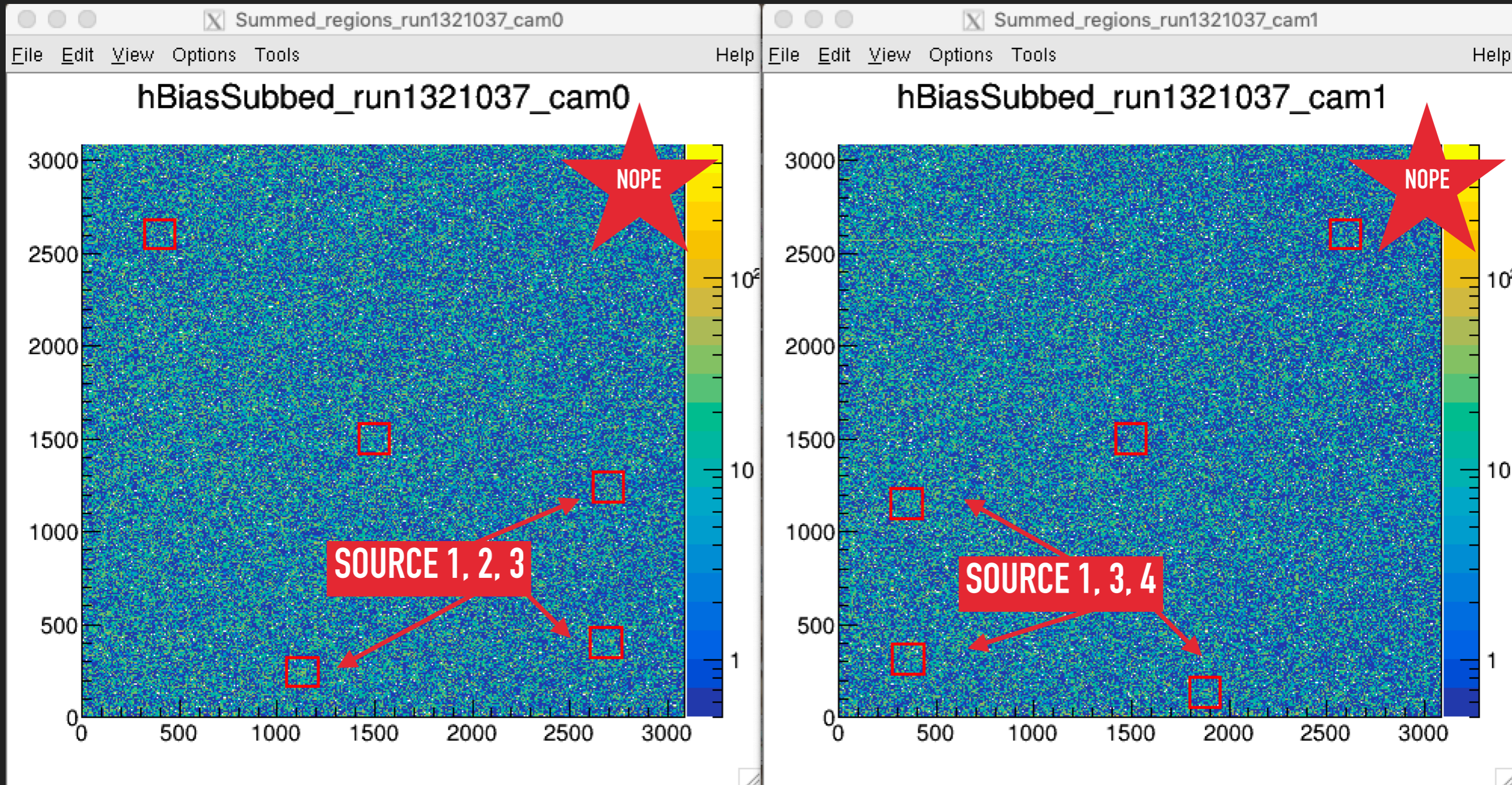
LIGHT SUM SQUARE

LIGHT SUM SQUARE - UPDATE

- ▶ I have fully merged LightSumSquare with Will's SparkKiller -> We now have spark cutting and image merging
- ▶ Also added TH2D's which showing regions in interest on the merged images
- ▶ Additionally I've added a RMS tree so we can track how we should set the RMS cut from run to run
- ▶ I've written a `plot_lightsumsquare.cxx` which takes the vales written in the LightSumTree and plots event vs region of interest sums for each camera over a run
- ▶ I've found some issues with SparkKiller (and therefore LightSumSquare) which stops it processing some files-> Any input here would be appreciated, however I want to see if running on the farm fixes this

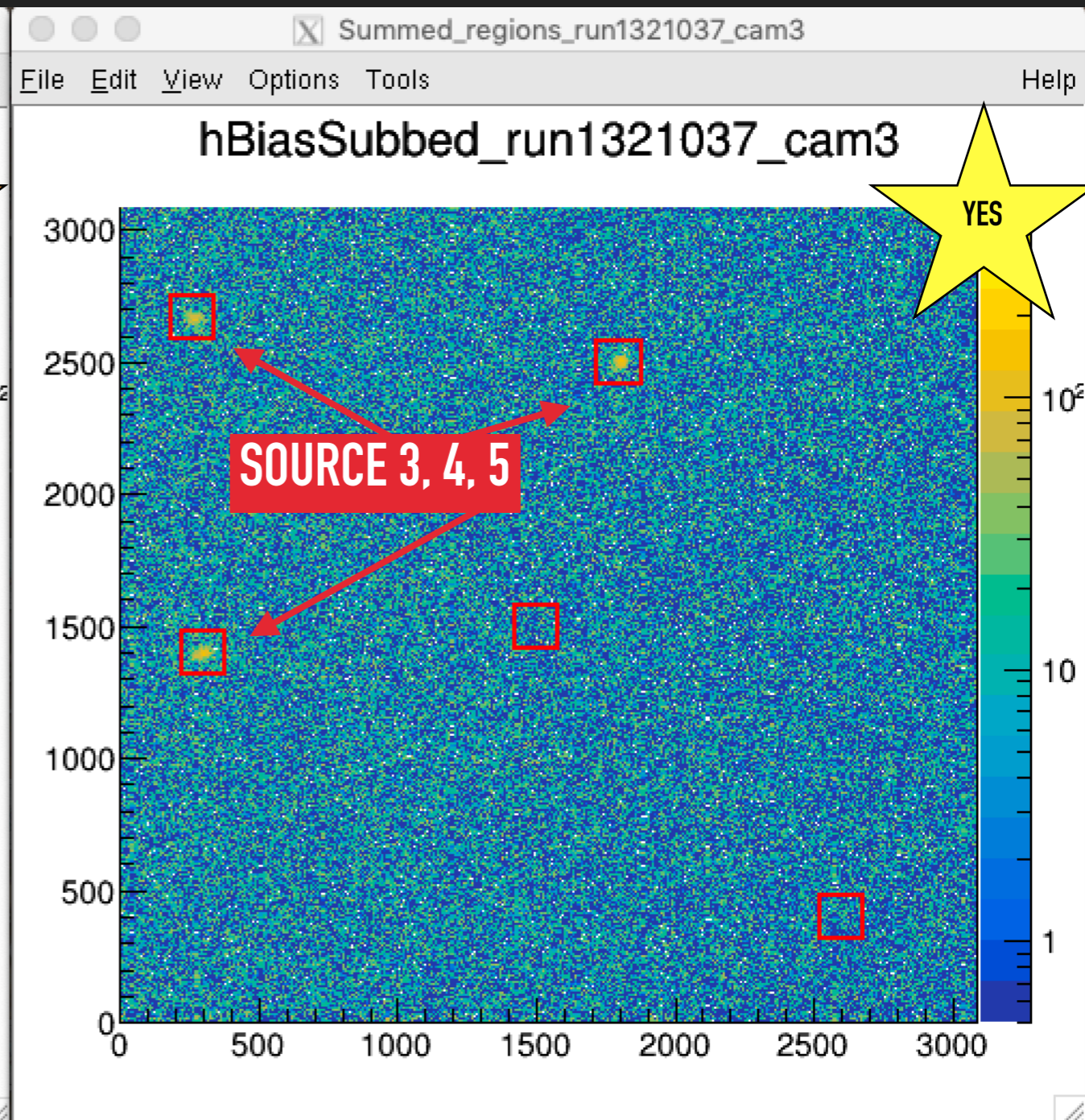
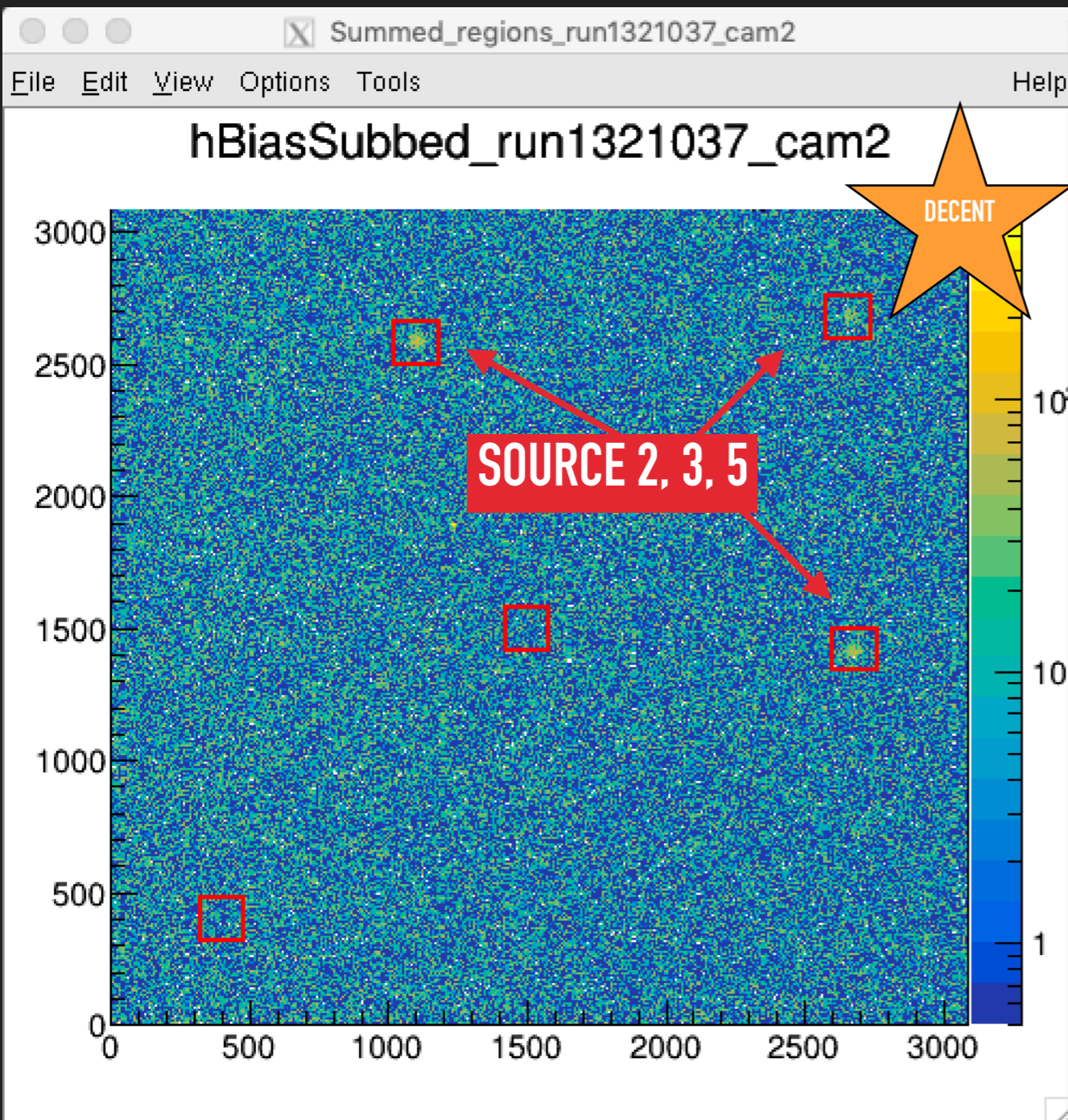
LIGHT SUM SQUARE - PLOT_LIGHTSUMSQUARE

Lightsumsquareoutput_R1321037.root



LIGHT SUM SQUARE - PLOT_LIGHTSUMSQUARE

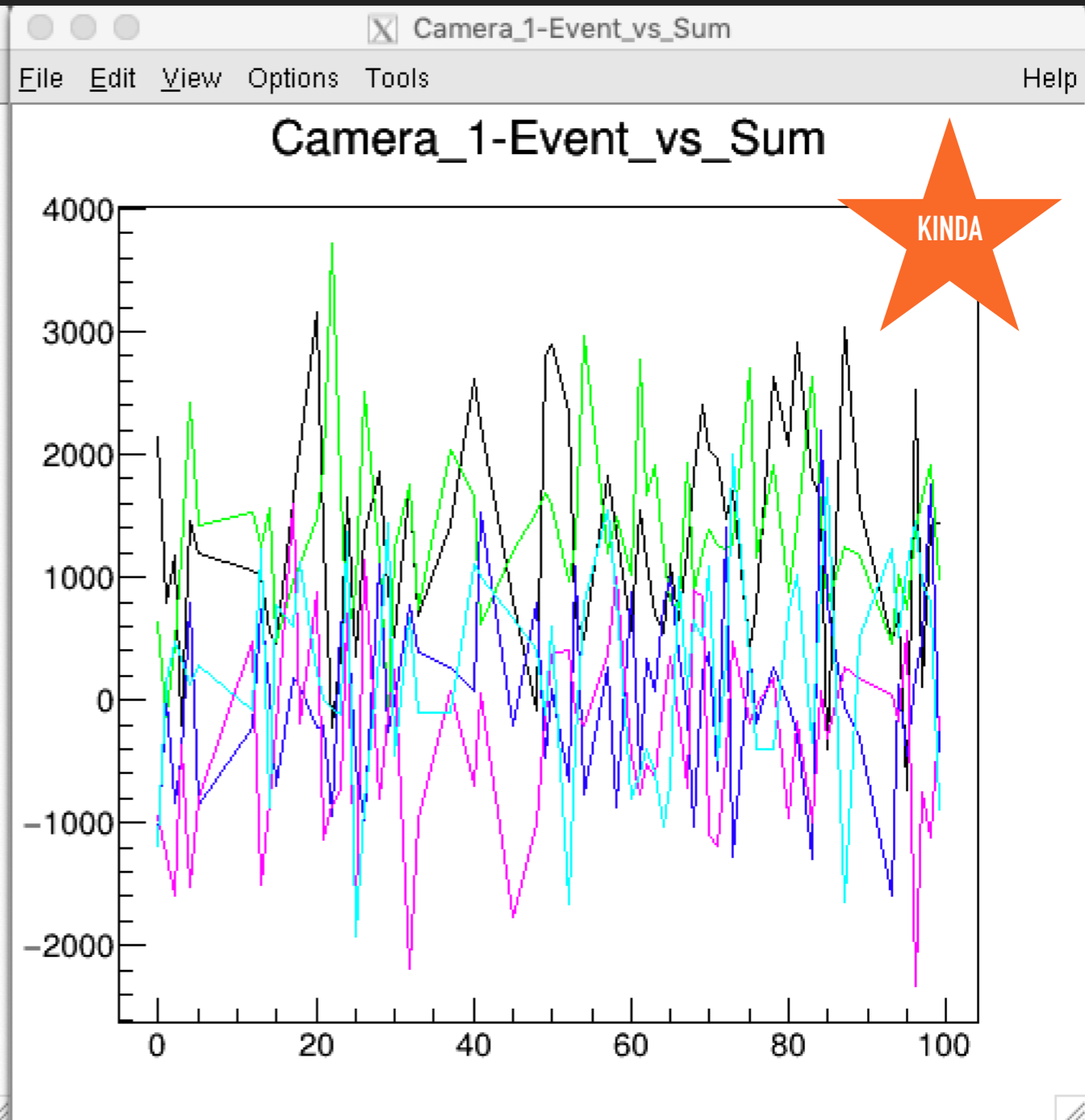
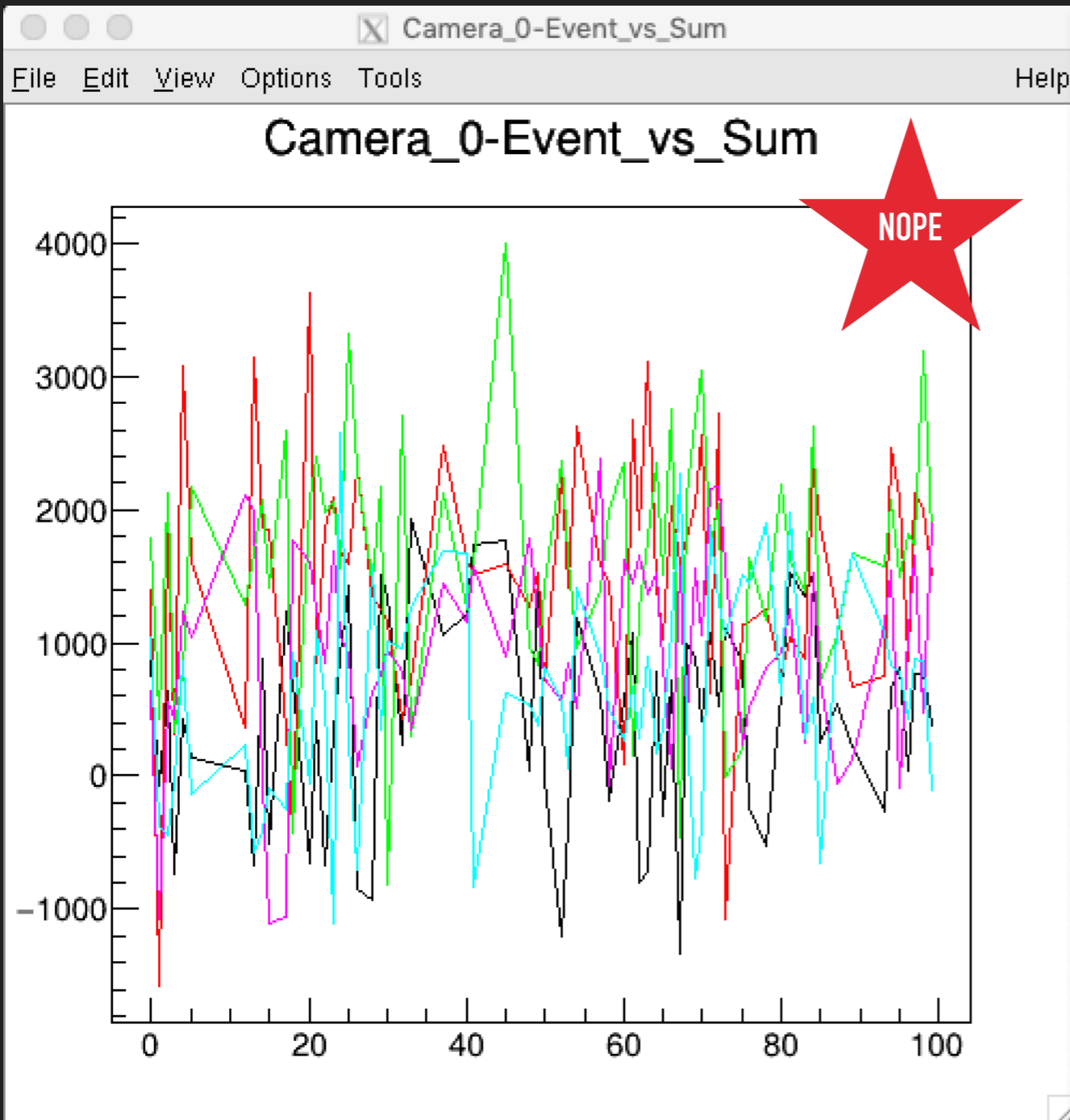
Lightsumsquareoutput_R1321037.root



LIGHT SUM SQUARE

LIGHT SUM SQUARE - PLOT_LIGHTSUMSQUARE (EVENT VS SUM)

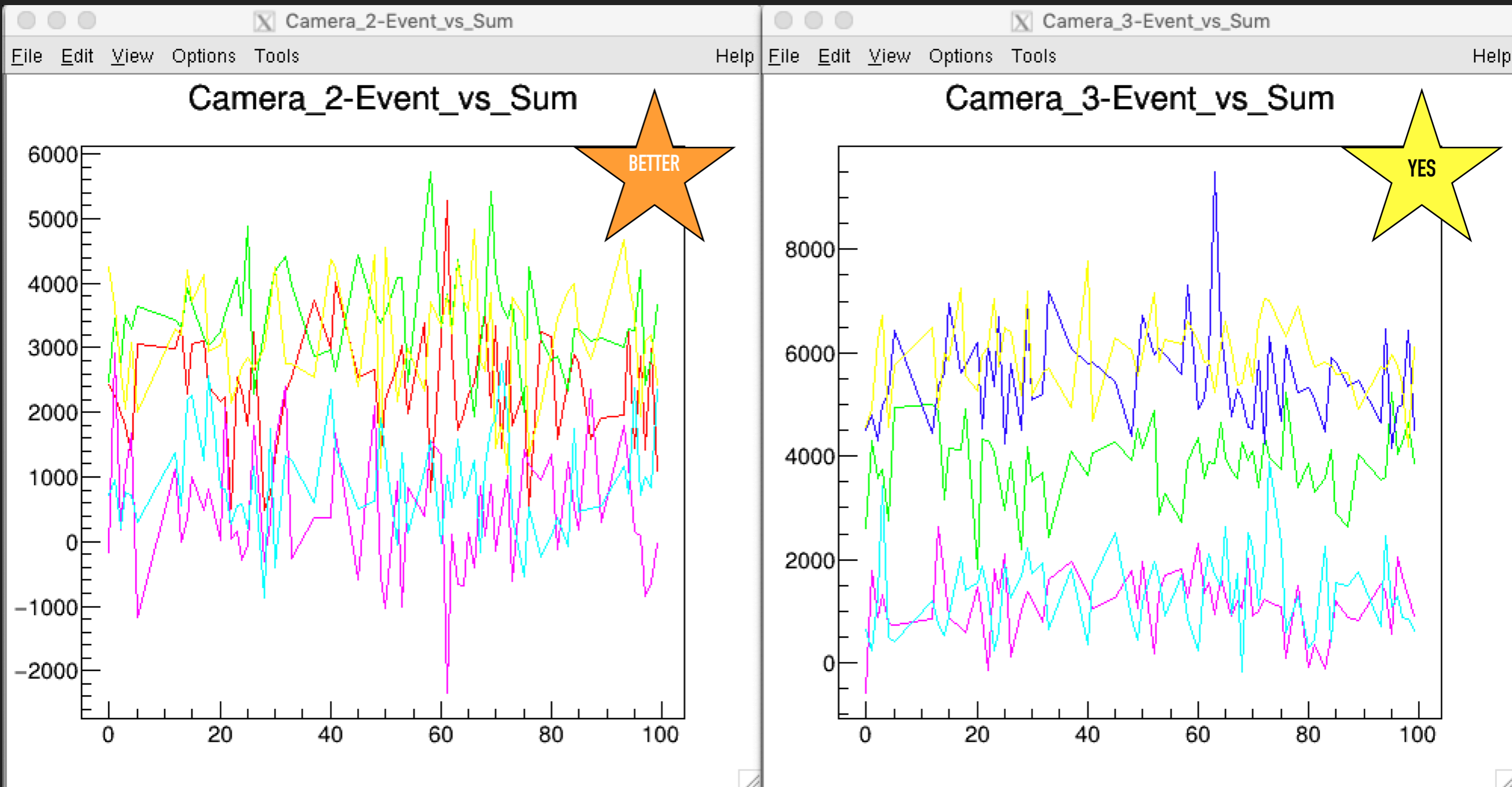
 = No Source, (All other colours ref. sources 1-5) Lightsumsquareoutput_R1321037.root



LIGHT SUM SQUARE

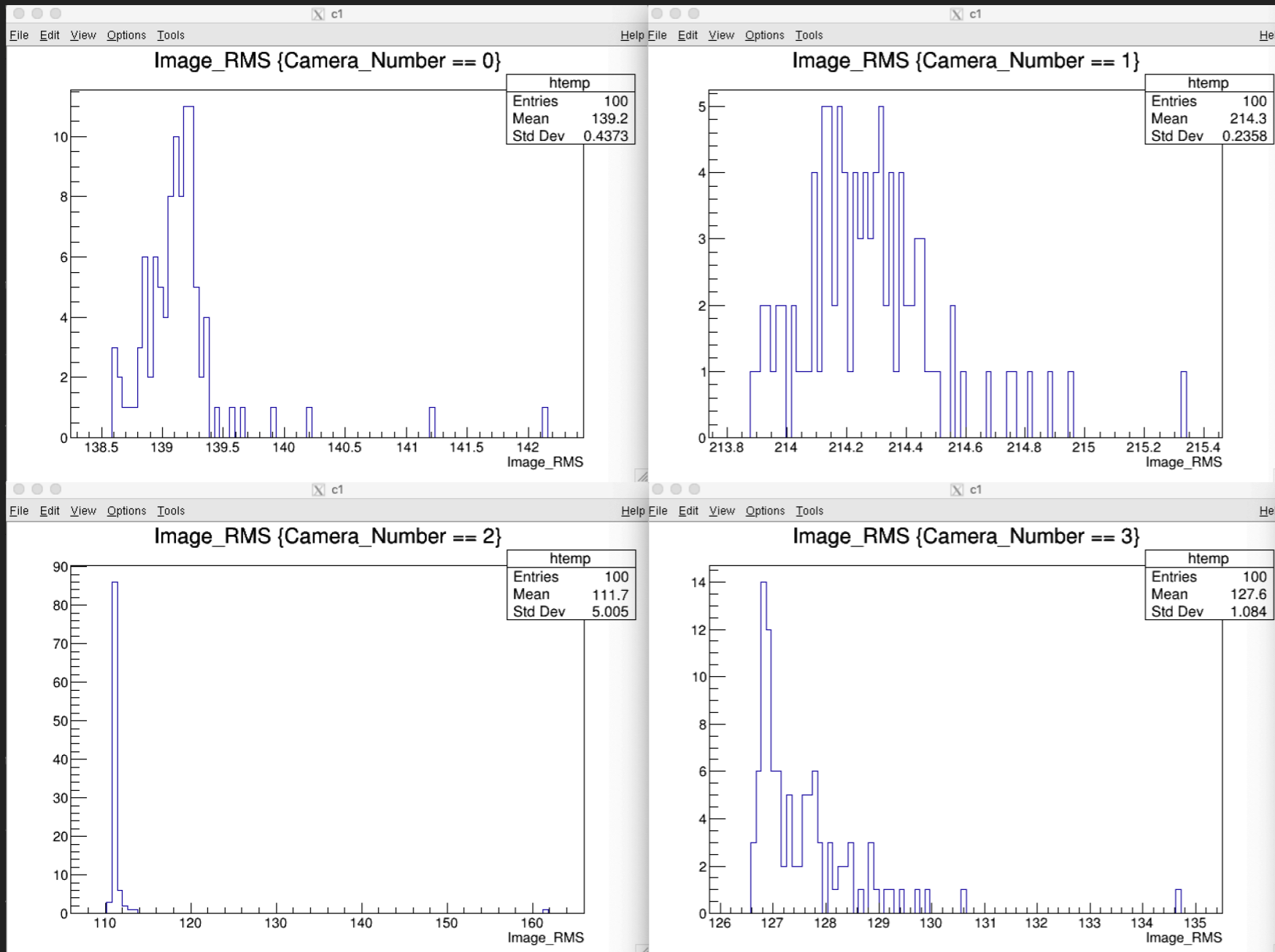
LIGHT SUM SQUARE - PLOT_LIGHTSUMSQUARE (EVENT VS SUM)

 = No Source, (All other colours ref. sources 1-5) Lightsumsquareoutput_R1321037.root



LIGHT SUM SQUARE – RMS TREE

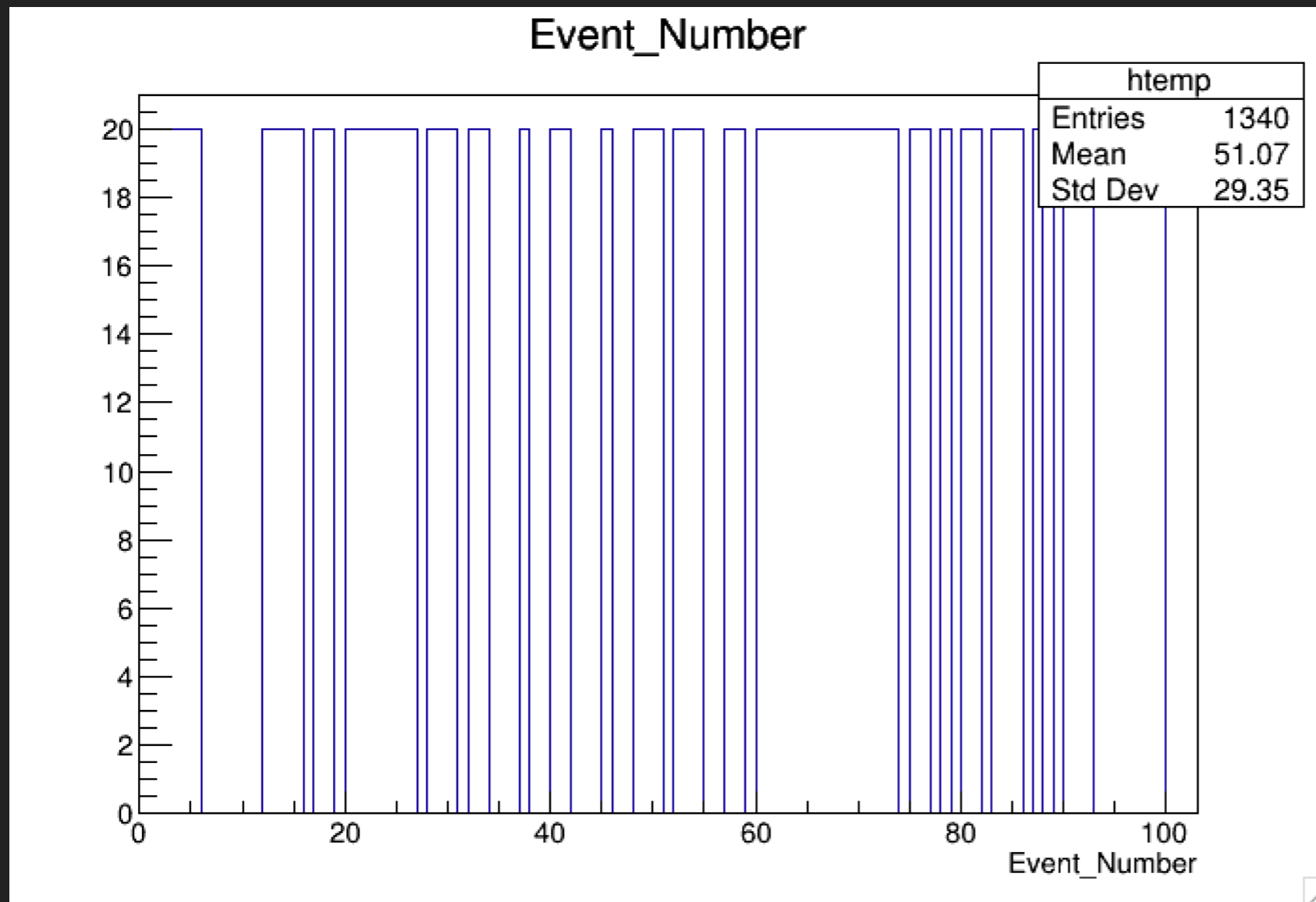
Lightsumsquareoutput_R1339032.root
A1=3374, A2=5223, A3=7726, C=-10771



- ▶ RMSTree records images RMS, Camera number, Cut Threshold and from this we can tune the RMS_Threshold values
- ▶ Only non-cut events make it into the LightSumTree

LIGHT SUM SQUARE - RMS TREE

Lightsumsquareoutput_R1339032.root
 A1=3374, A2=5223, A3=7726, C=-10771



- ▶ Only non-cut events make it into the LightSumTree
- ▶ I lowered the thresholds and plotting the event numbers from the LightSumTree we can see either 0 or 20 (5 Sums * 4 Cams) per event

LIGHT SUM SQUARE - NEXT STEPS

- ▶ Investigation into non-source location sums which seem to average at approx 2 ADU per pixels - bias subtraction issue or light leak?
 - ▶ Plotting bias frames - average bias $\rightarrow 0$ we may have a light leak
 - ▶ Also be good to take some bias frames with a light source to check shutters (Camera 3)
- ▶ Look into source location sum and non-source location sum correlation w.r.t sensible behaviour of gain