# SVD Hot Strips

## OCCUPANCY

Giulia Casarosa

# Introduction

➡ Hot Strips list must be determined before we can turn on SVD with beams.

➡ List of Hot Strips will be loaded on FADC to mask these channels and be sensitive to beam background levels through occupancy plots

➡ Hot strips should be masked also on DQM plots

➡ We have observed that a strip can be hot for a limited time within a run and that the hot strips vary from run to run

➡ Urgent stuff:

  1. determine an algorithm to flag a strip as hot (Andrzej?)

  2. run the algorithm on "some" runs

  3. build the hot strips list as the "or" of the list of each run

  4. provide the basf2 dbobjects (Laura) and module (Giulia), modify the reconstruction on ExpressReco to shut down hot strips on DQM (Giulia).

# Dataset

➡ Strips are hot depending on the ZS cut, with beams we will use 5.

➡ I reprocessed some runs applying Zero Suppression cut = 5 and building the average occupancy of each strip every 100k events

| runs | # events | trigger | masking | fraction of strips with no entries |
|------|----------|---------|---------|-----------------------------------|
| 2015 | 4785565 | 5kHz | loose masking (50%) | 2.6% |
| 2016 | 11023189 | 10kHz | loose masking (50%) | 2.5% |
| 2615 | 2303799 | 1kHz | | 4.5% |
| 2650 | 1805877 | | | 7.4% |
| 2712 | 3312916 | | partial | 7.4% |
| 2762 | 736967 | | partial + APVs on L3 and L5 | 39.6% |
| 2766 | 7074797 | | partial + APVs on L3 and L5 | 8.1% ?? |

# Occupancy VS Time for each strip



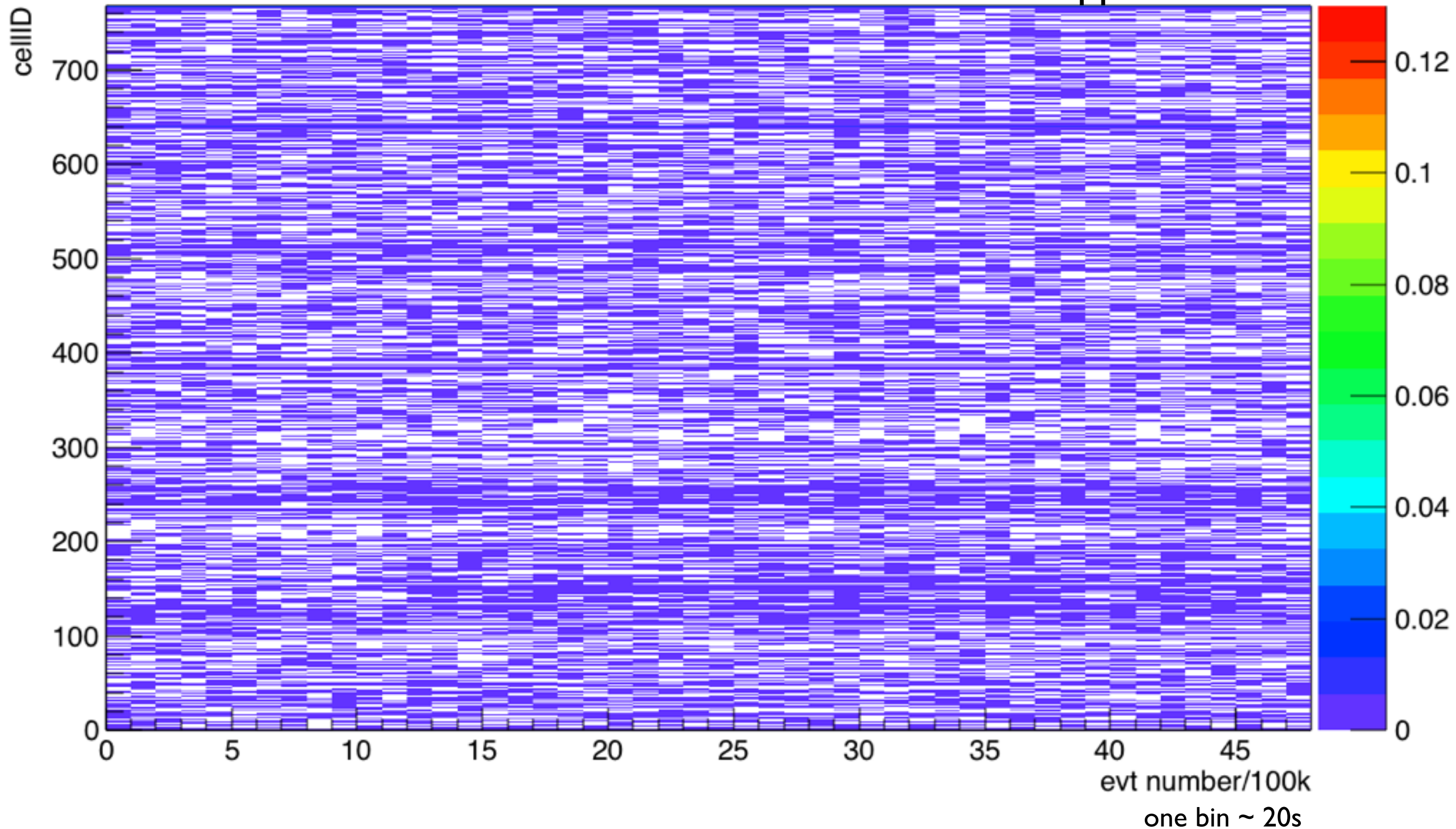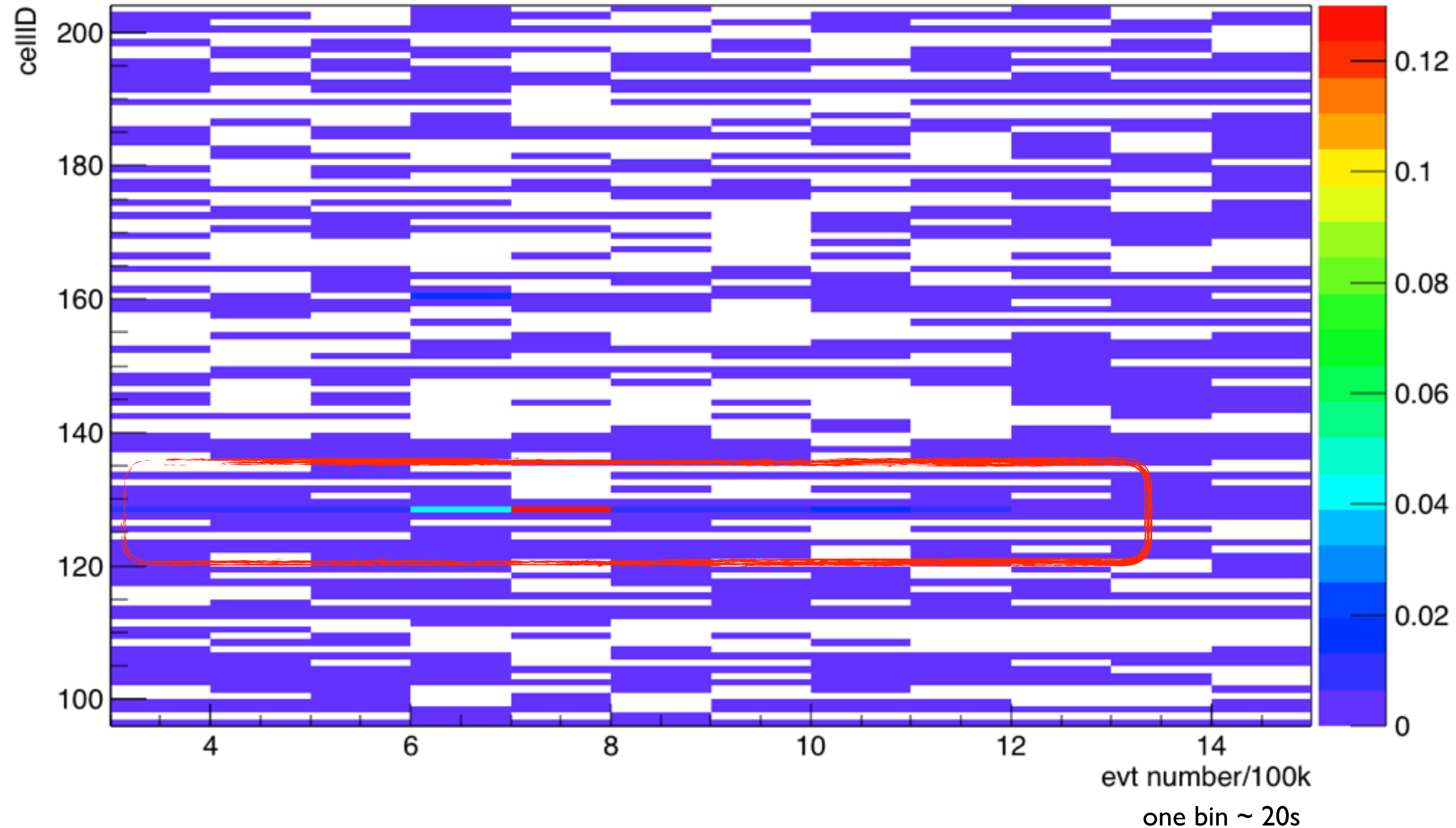Occupancy vs Evt number(L3, sensor2,U side)

Zero Suppression = 3
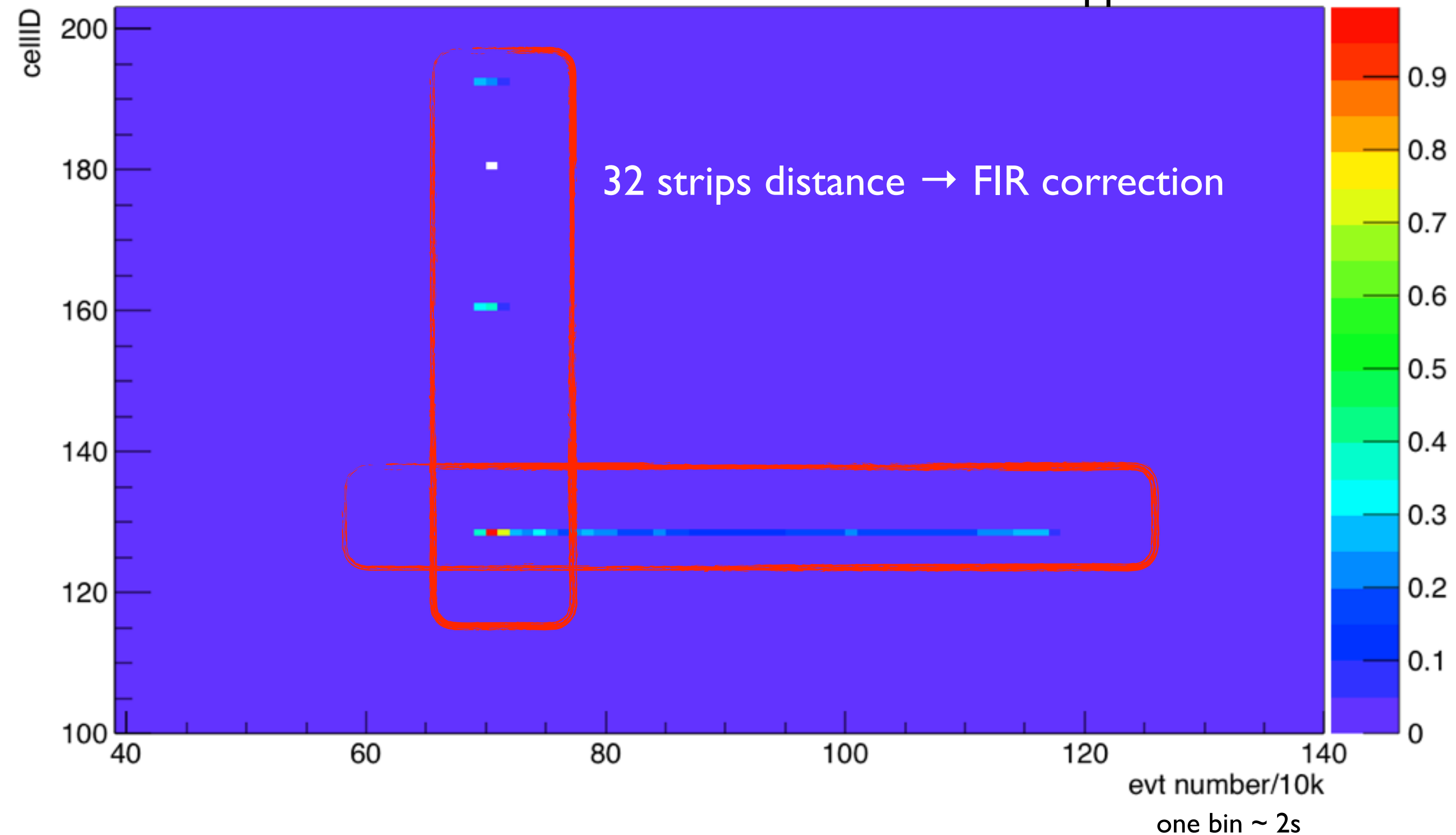
32 strips distance → FIR correction

one bin ~ 2s

# Occupancy VS Time for each strip



Occupancy vs Evt number(L3, sensor2,U side)

Zero Suppression = 5

evt number/100k

one bin ~ 20s

# Occupancy VS Time for each strip ZOOMED



Occupancy vs Evt number(L3, sensor2,U side)

one bin ~ 20s

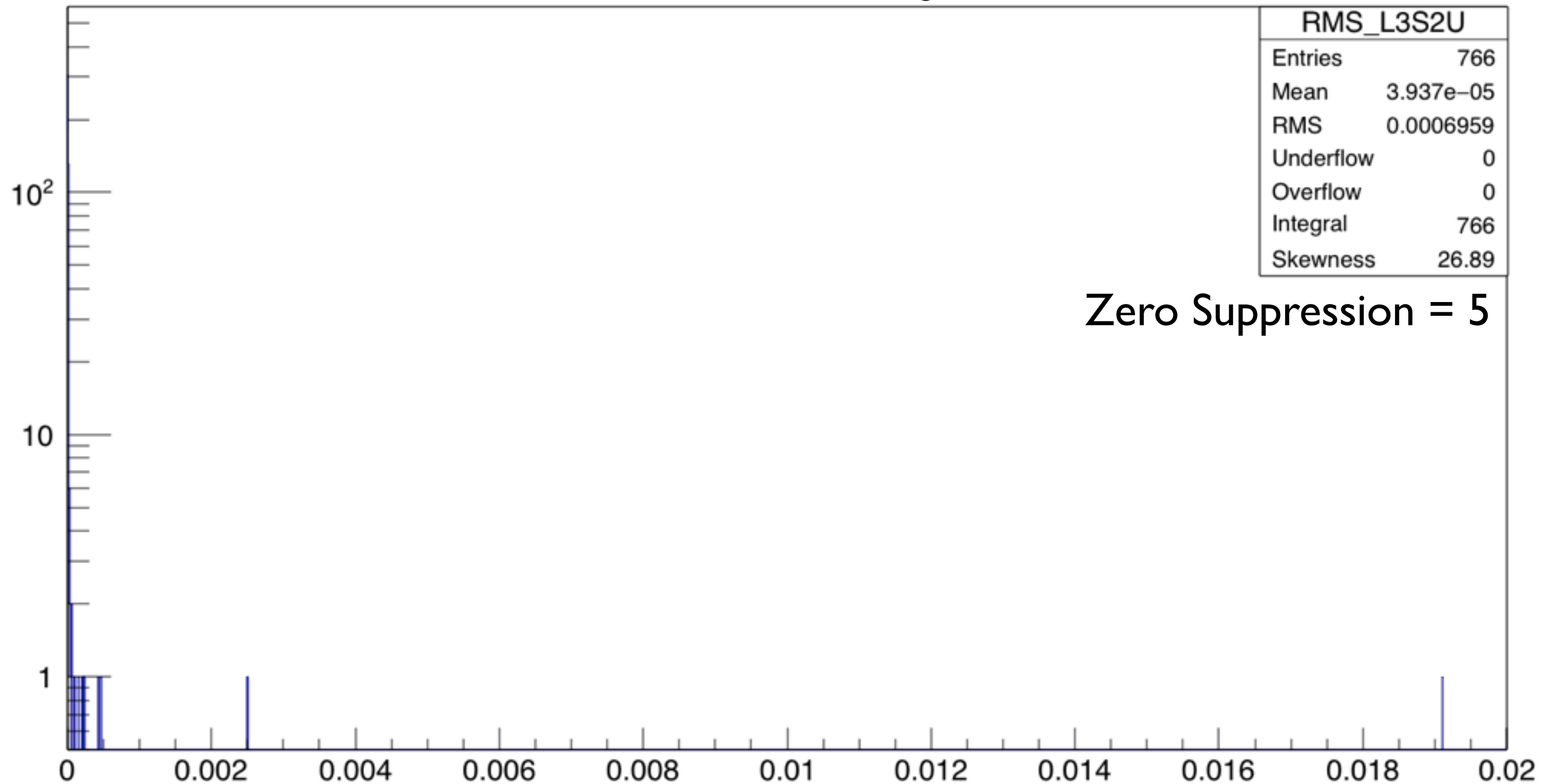# Tools #1



Occupancy Average
averaged on time

L3S2U

| AVE_L3S2U | |
|---|---|
| Entries | 766 |
| Mean | 0.0001097 |
| RMS | 0.001039 |
| Underflow | 0 |
| Overflow | 0 |
| Integral | 766 |
| Skewness | 15.02 |
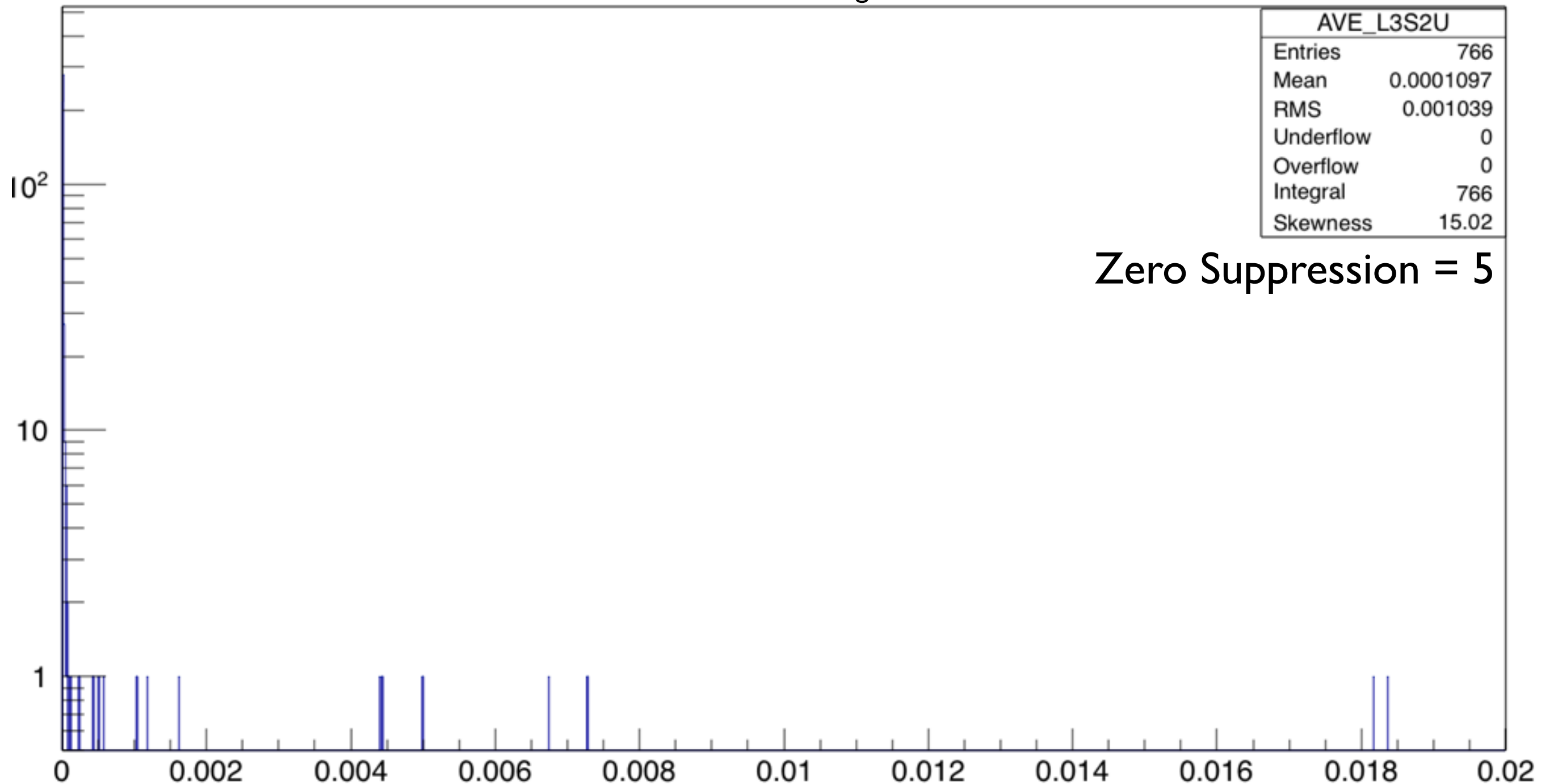
Zero Suppression = 5

# Tools #2

# Tools #3

## Occupancy Average VS RMS

L3S2U

Zero Suppression = 5



hot strips (high average) tend to vary more with time (high RMS)

| AVEvsRMS_L3S2U_pfx | |
|---|---|
| Entries | 766 |
| Mean | 0.0001096 |
| Mean y | 3.967e−05 |
| RMS | 0.001039 |
| RMS y | 0.0006958 |
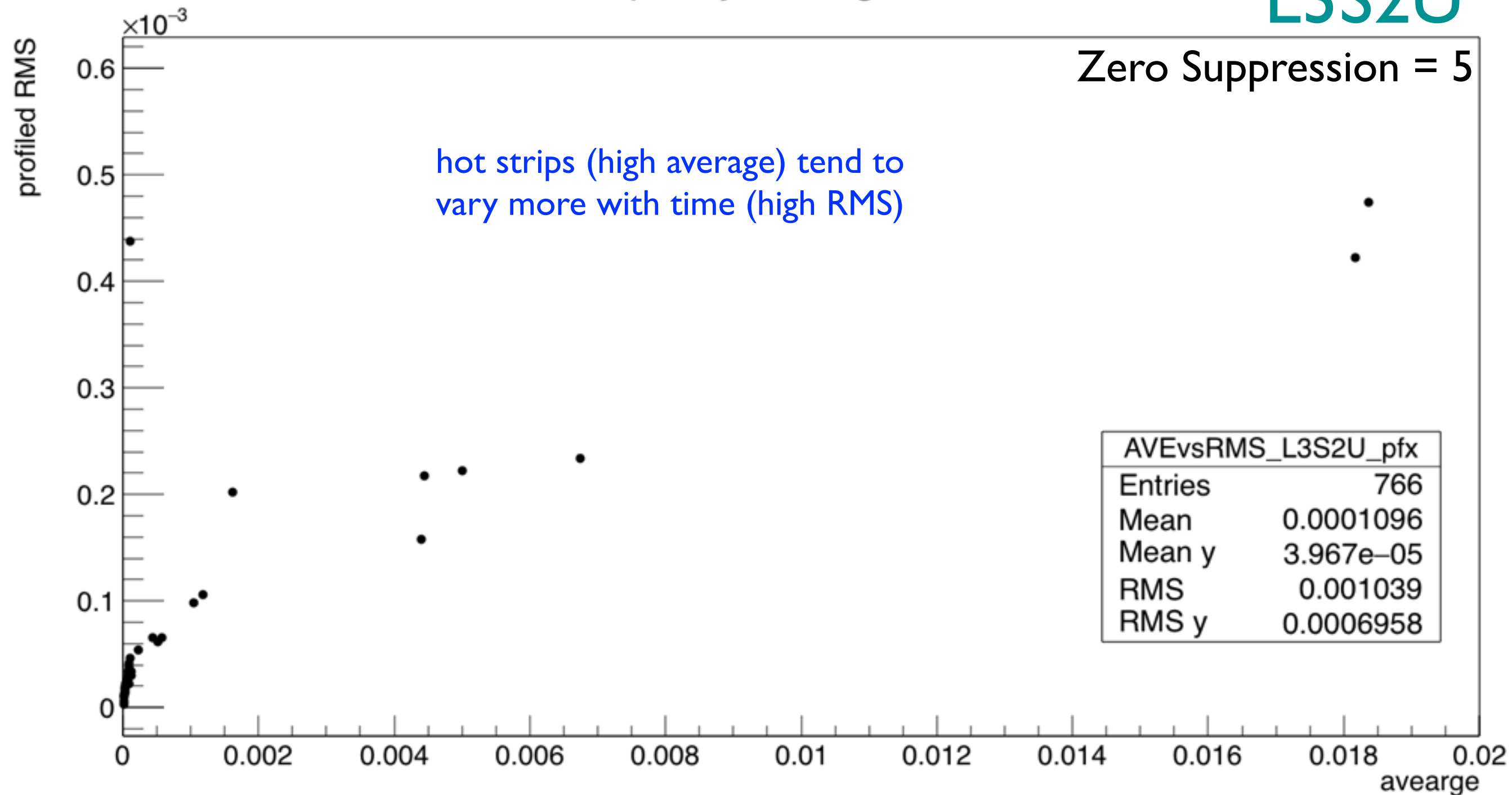
# Tools #4

## Occupancy Average VS cellID

L3S2U



| AVEvsCellID_L3S2U | |
|---|---|
| Entries | 766 |
| Mean x | 6.211e−05 |
| Mean y | 383.7 |
| RMS x | 0.0004663 |
| RMS y | 221.1 |

Zero Suppression = 5