Progress with TB2022 data analysis

Melissa Almanza Soto (IFIC)

Advisor:Adrián Irles

20/12/2023

Files and run

- Using tree in:

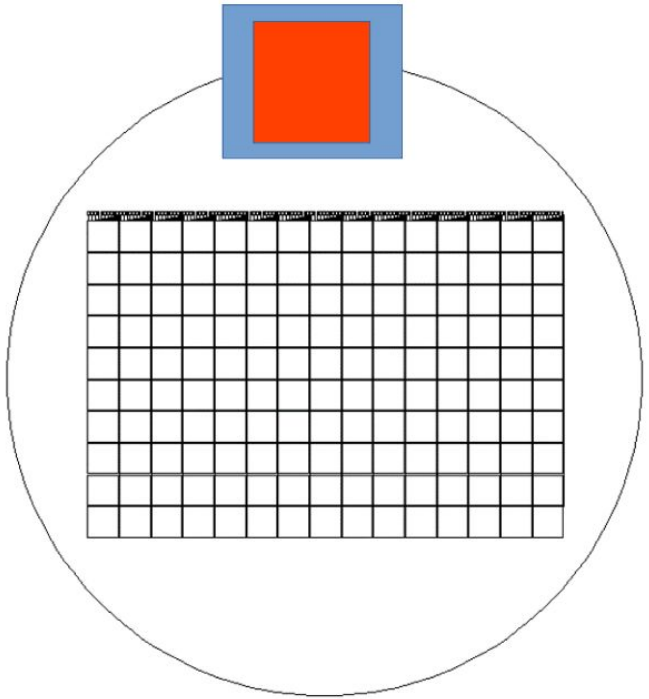
  Calice-c75.root

  gaas-y1.root

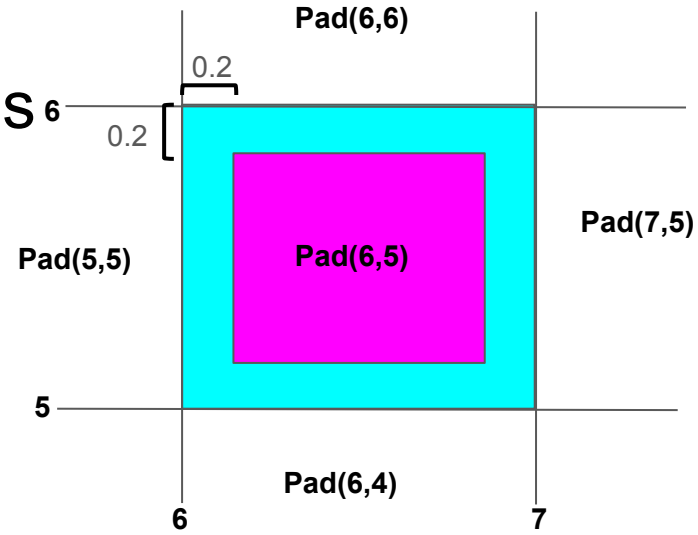
  - Contains aligned Sensor + Telescope data.
  - Made by Shan.
  - Events with one track and one fired pad

Homogeneity of the pad response

- Only events with 1 track
- Defined areas to study the response
  - Centre
  - Edges
  - Outside of pad
  - Gap area for GaAs sensor
- Removed dead and noisy channels
- Langaus fit



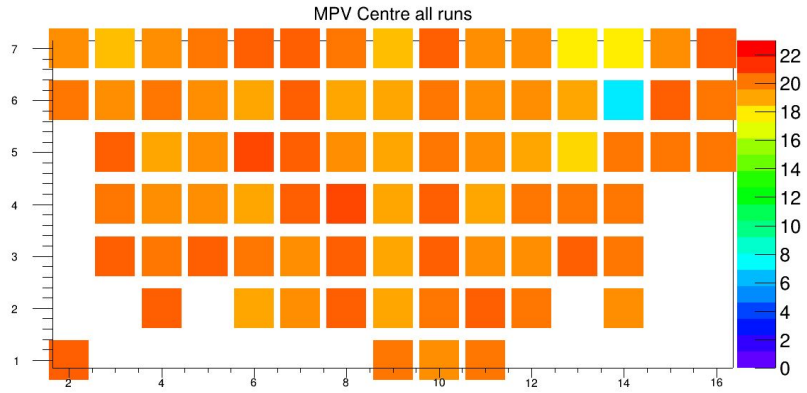
Example of signal for the three areas

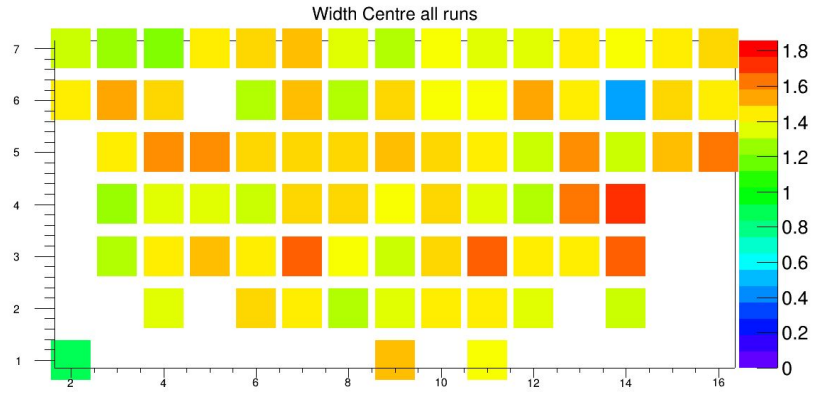


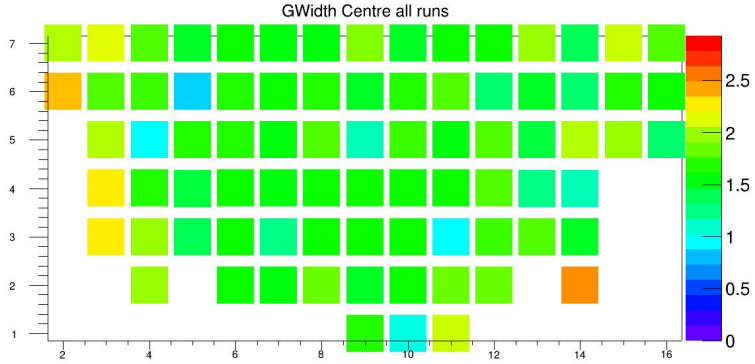
X pad	Y pad	adc	X telescope	Y telescope	Area
6	5	20	6.5	5.6111	Centre
6	5	21	6.1	5.9	Edge
6	5	19	8.5	3.0	Out

CALICE C75

Homogeneity of response for sensor using all runs: Centre

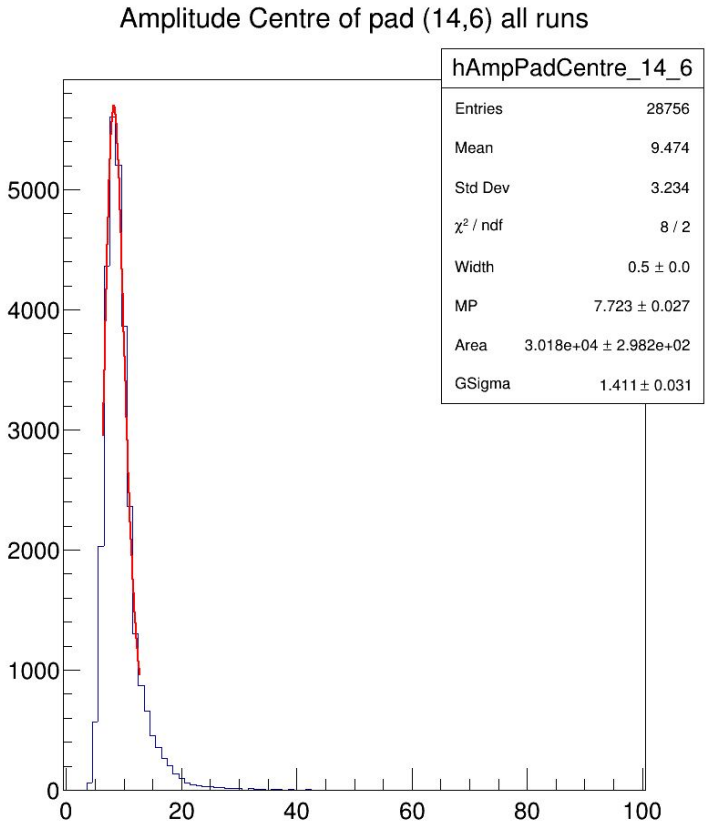




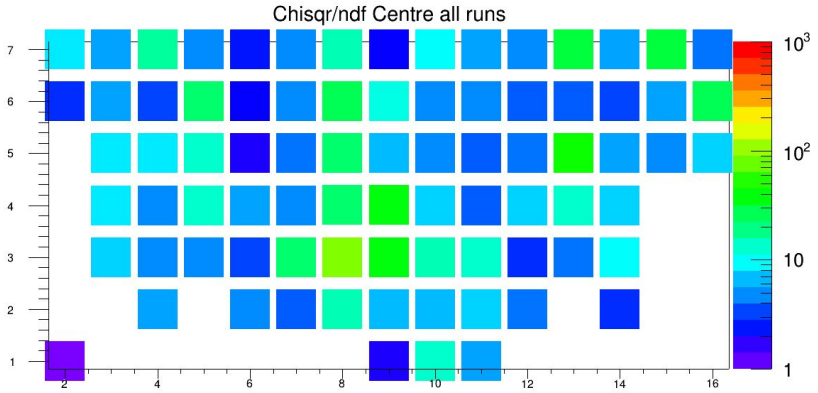


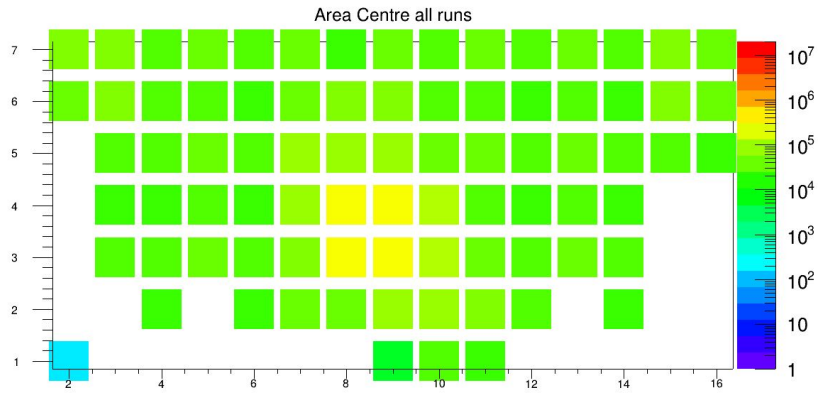
40

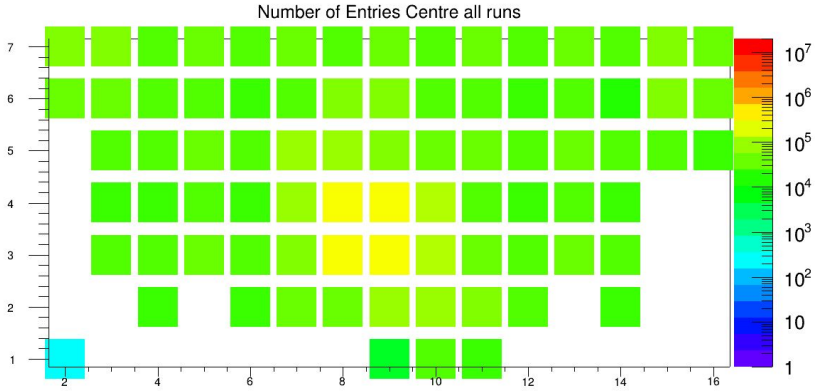
C75: Pad with low MPV



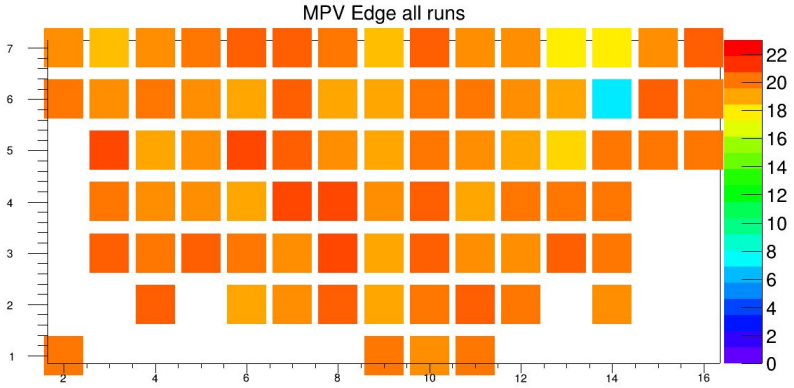
Homogeneity of response for sensor using all runs:Centre

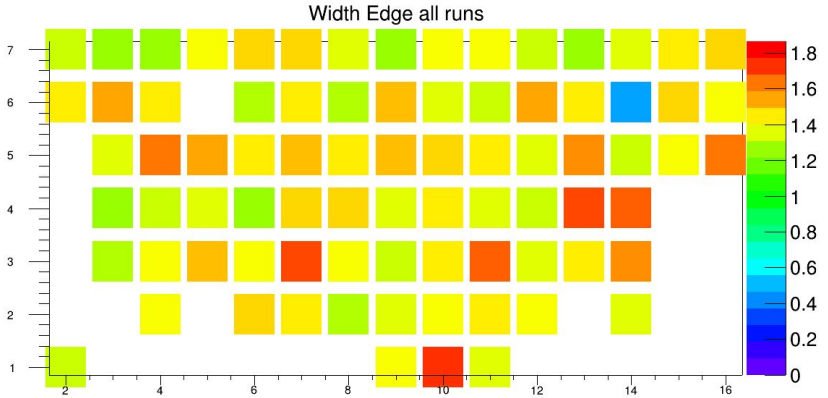


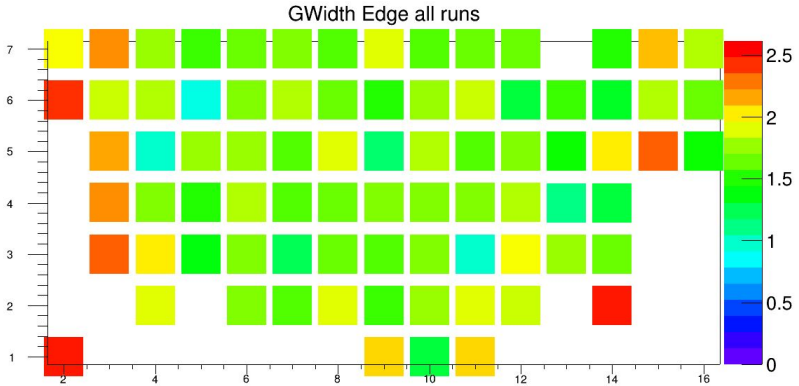




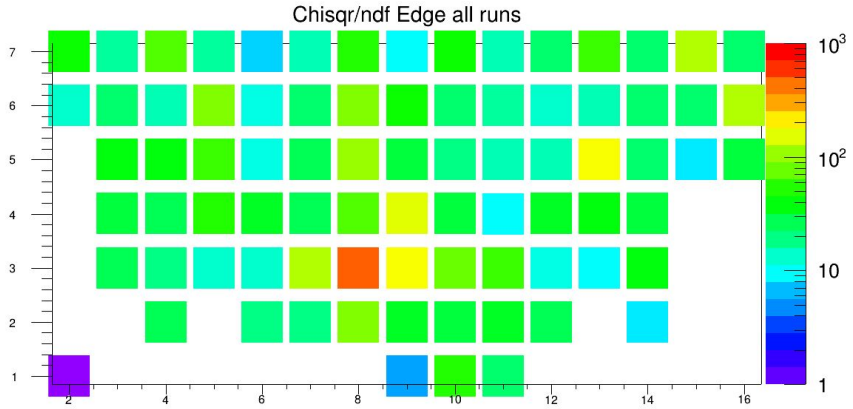
Homogeneity of response for sensor using all runs: Edges

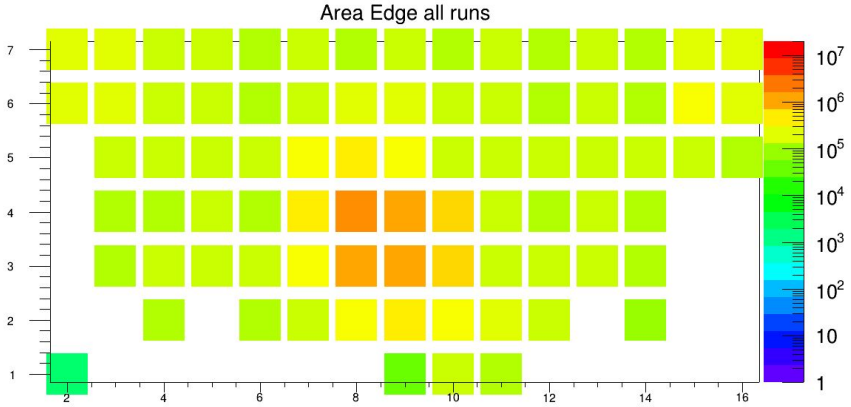


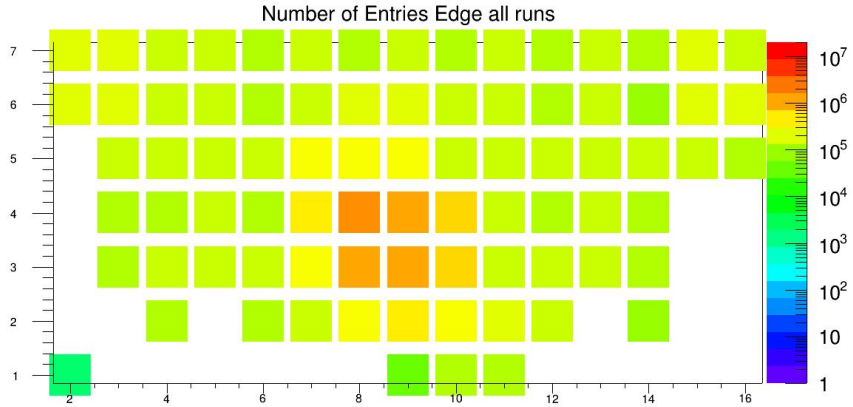




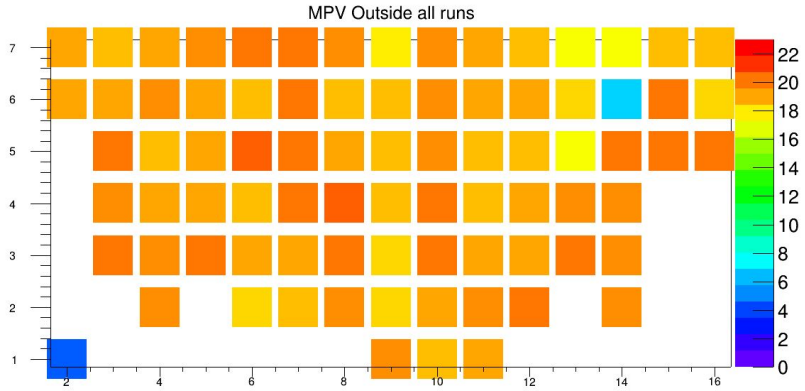
Homogeneity of response for sensor using all runs:Edges

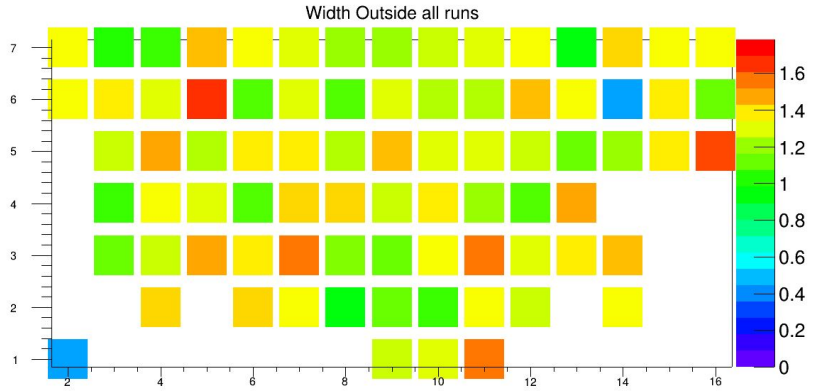


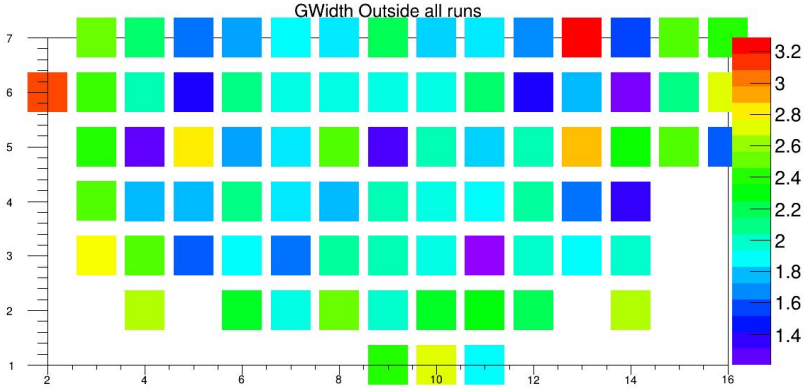




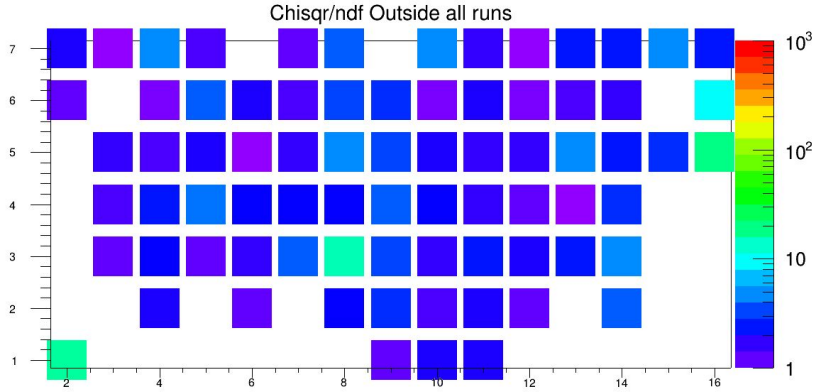
Homogeneity of response for sensor using all runs: Out

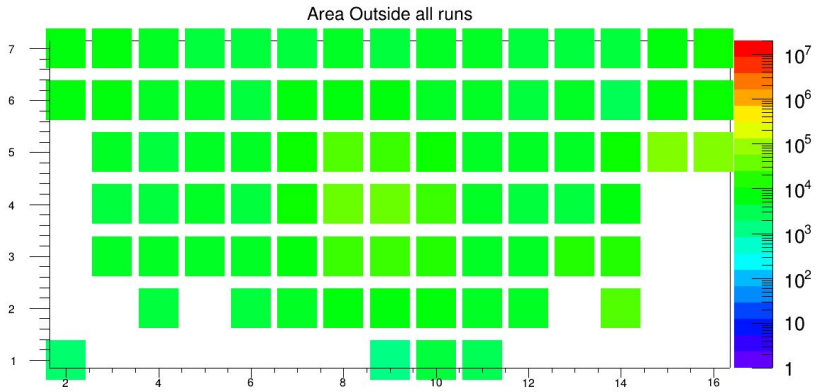


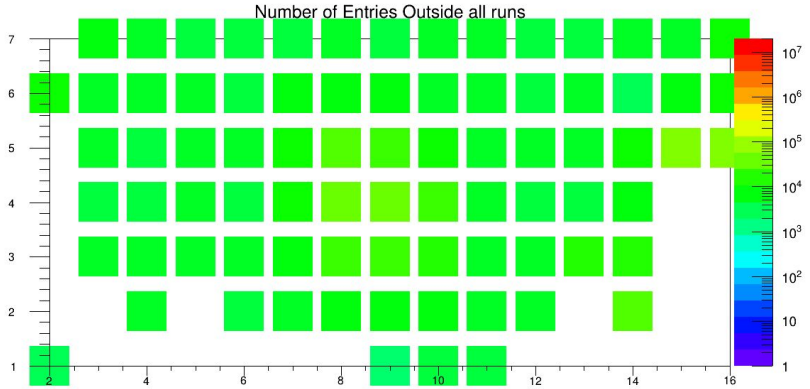




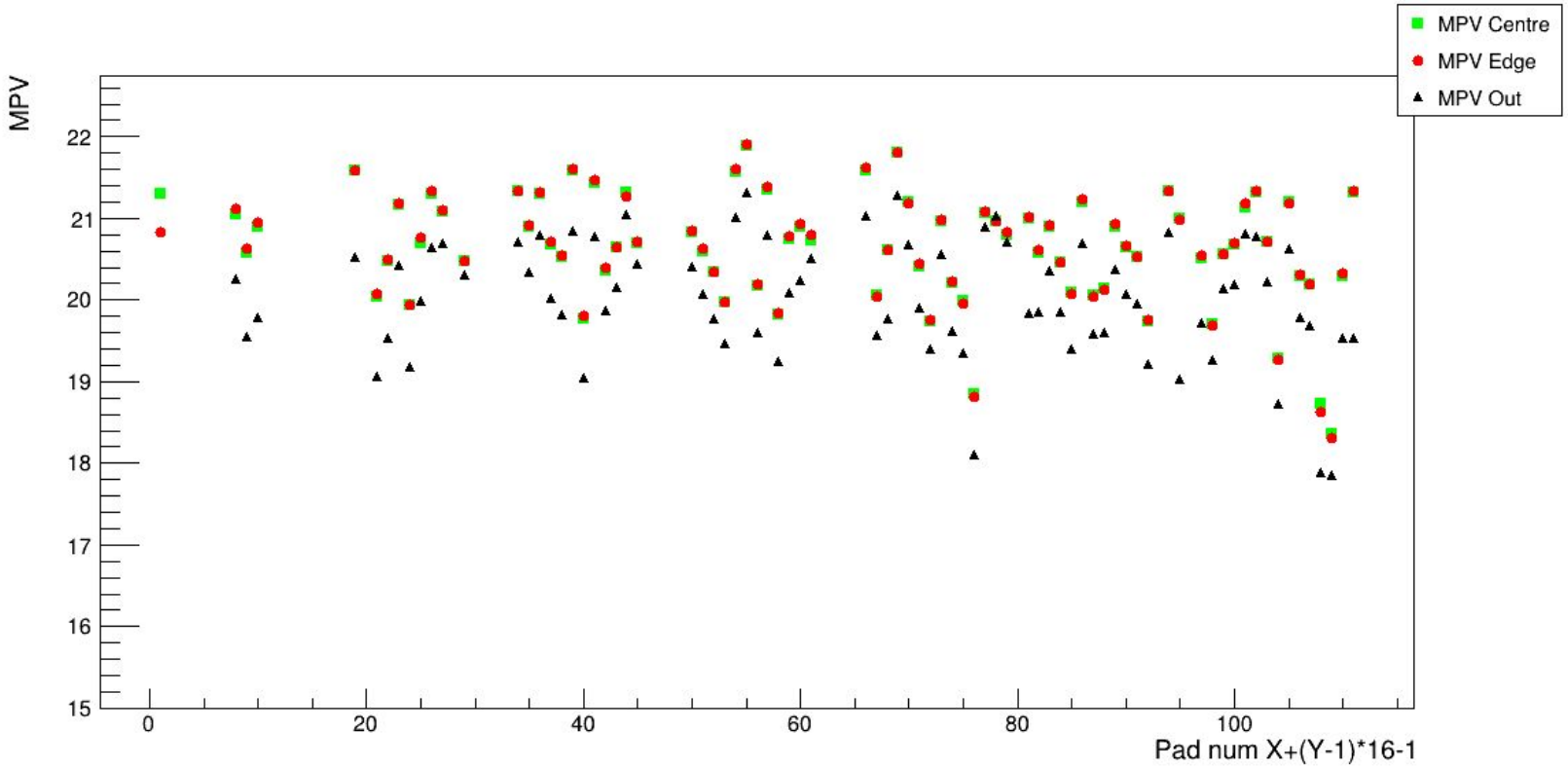
Homogeneity of response for sensor using all runs:Out



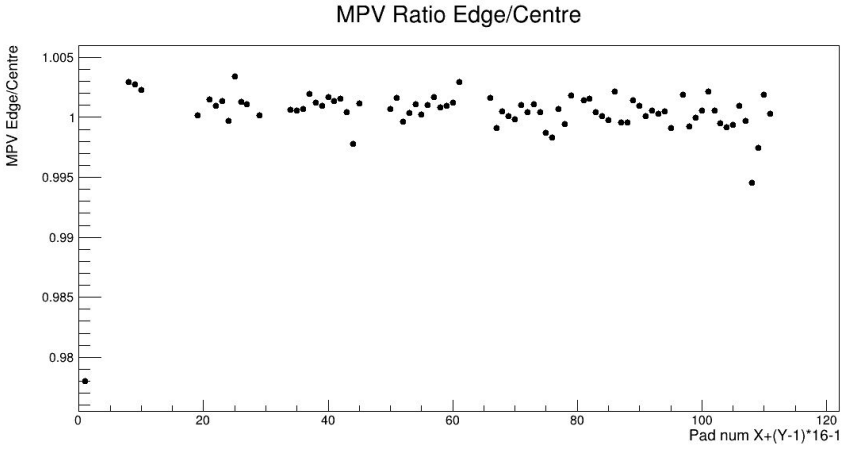


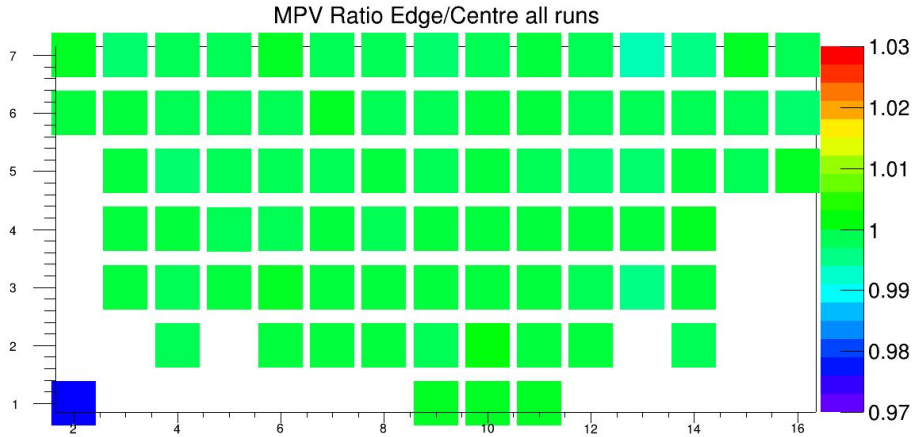


Summary of MPV for all areas 40

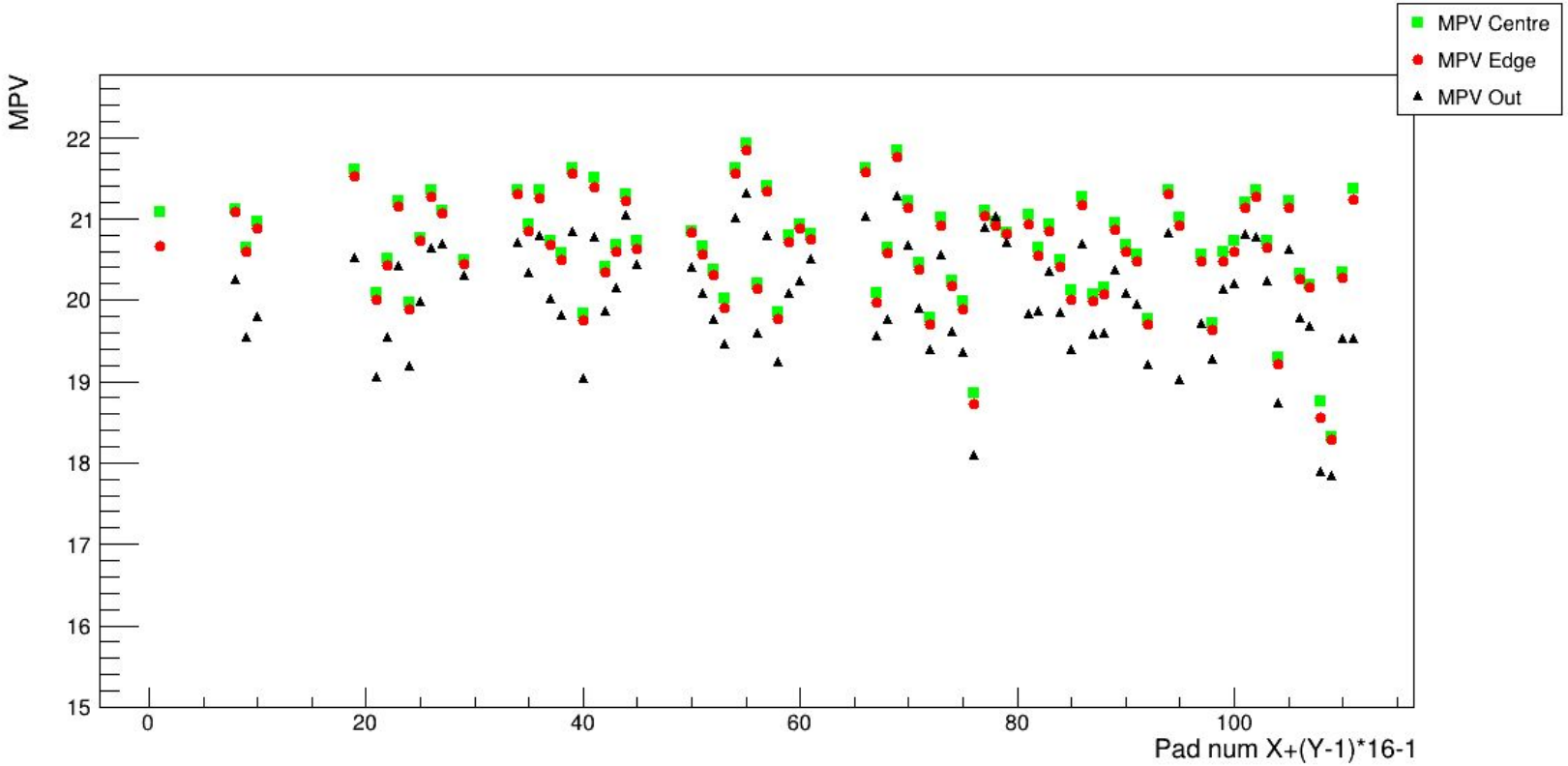


Ratio MPV 40

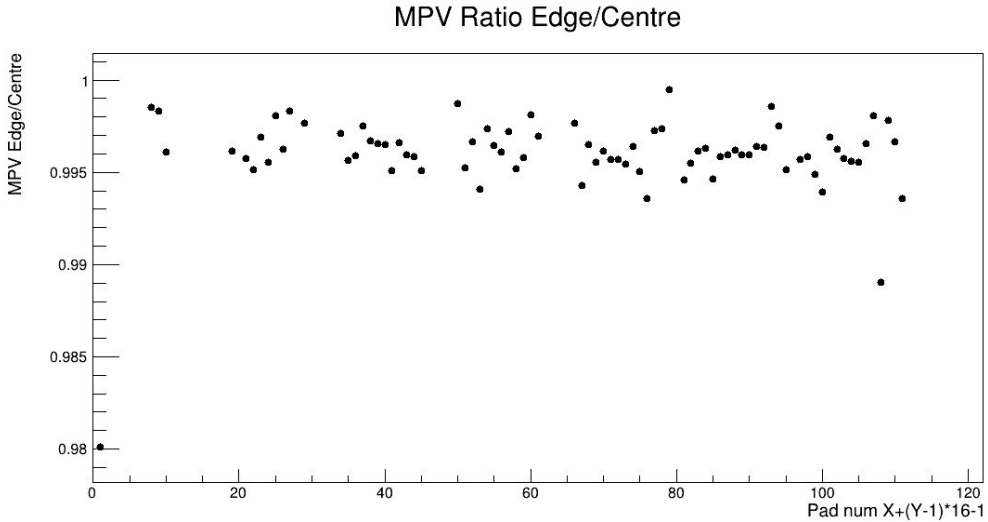

MPV Ratio Edge/Centre
MPV Edge/Centre
1.005
1
0.995
0.99
0.985
0.98
0
20
40
60
80
100
120
Pad num X+(Y-1)*16-1

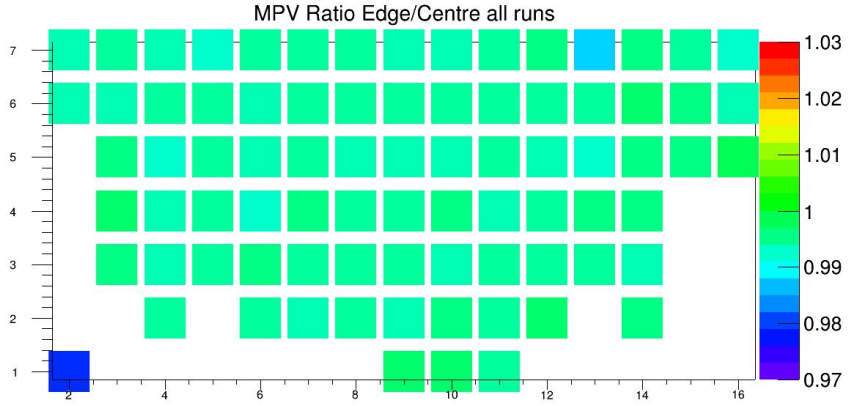

MPV Ratio Edge/Centre all runs
7
6
5
4
3
2
1
2
4
6
8
10
12
14
16
1.03
1.02
1.01
1
0.99
0.98
0.97

Summary of MPV for all areas 80



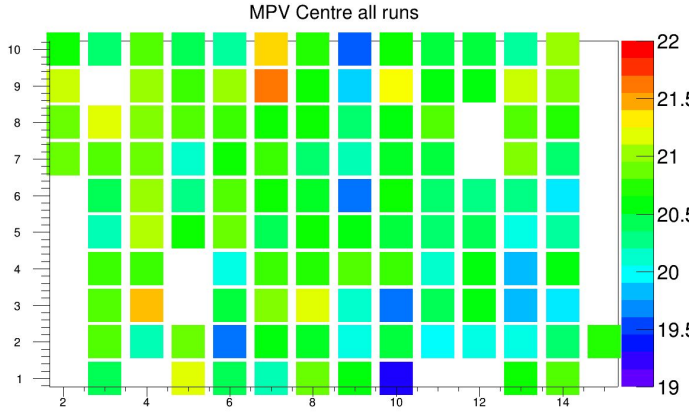
Ratio MPV 80

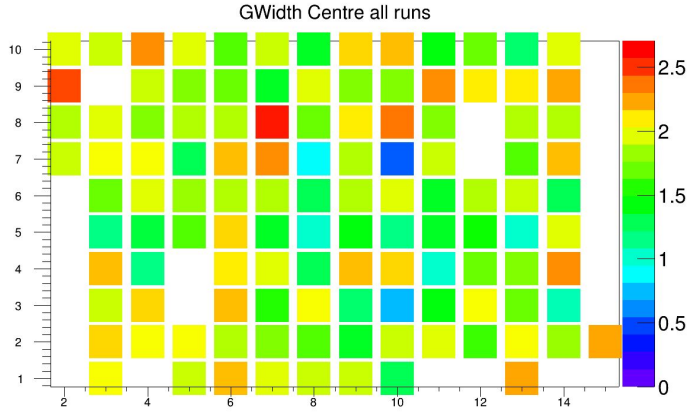

MPV Ratio Edge/Centre
MPV Edge/Centre
1
0.995
0.99
0.985
0.98
0
20
40
60
80
100
120
Pad num X+(Y-1)*16-1


MPV Ratio Edge/Centre all runs
7
6
5
4
3
2
1
2
4
6
8
10
12
14
16
1.03
1.02
1.01
1
0.99
0.98
0.97

GaAs Yan1

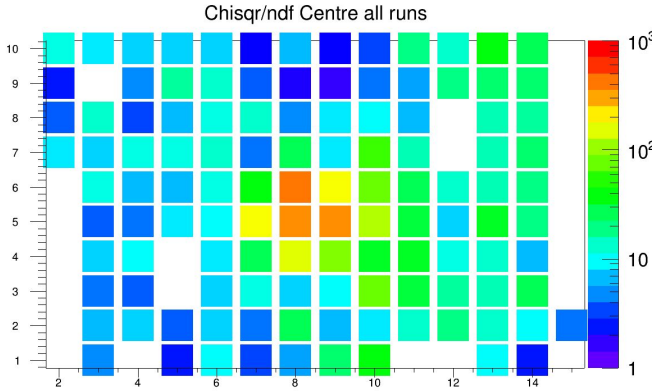
Homogeneity of response for sensor using all runs: Centre

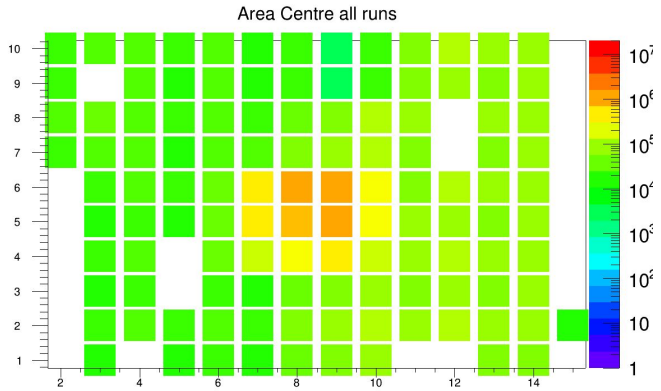


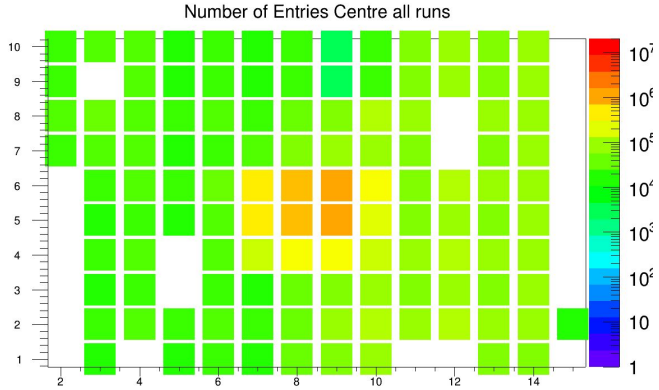


60

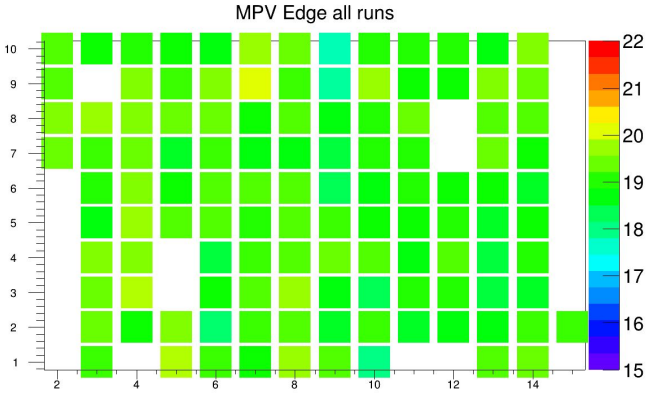
Homogeneity of response for sensor using all runs:Centre

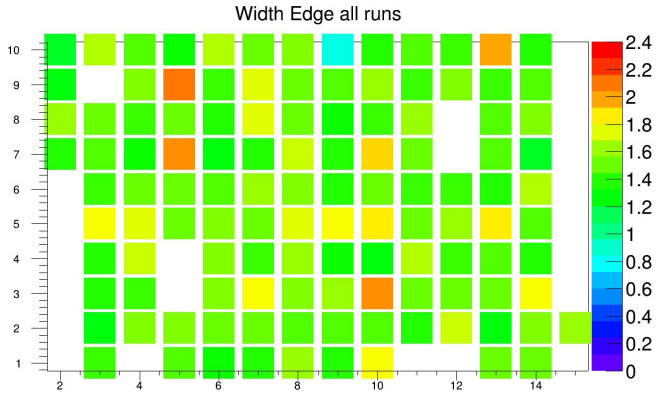


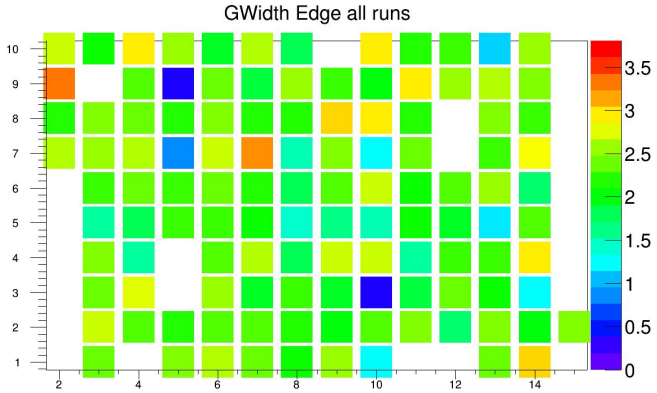




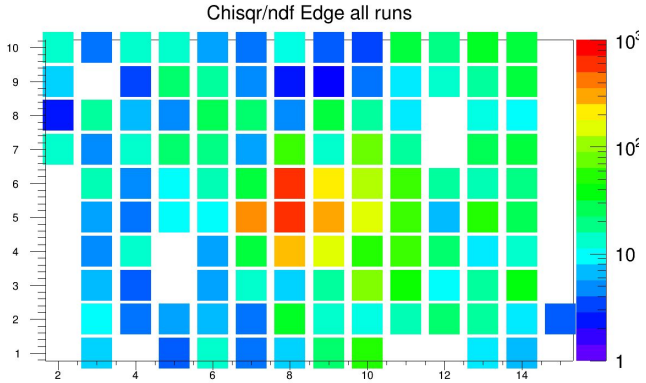
Homogeneity of response for sensor using all runs: Edges

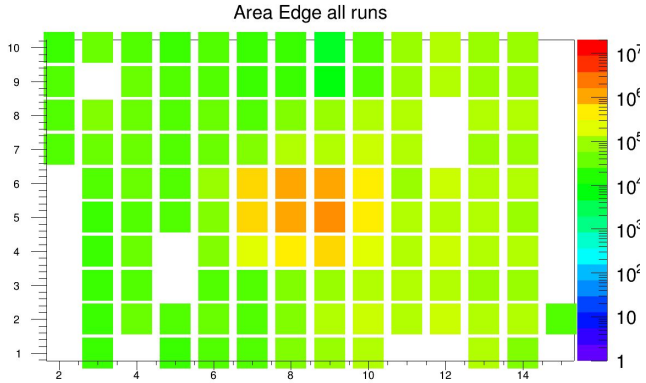


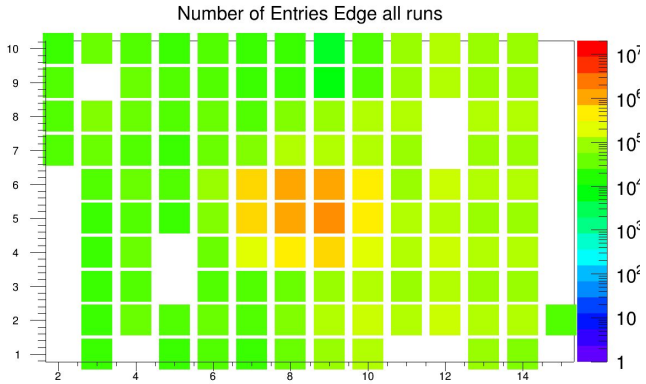




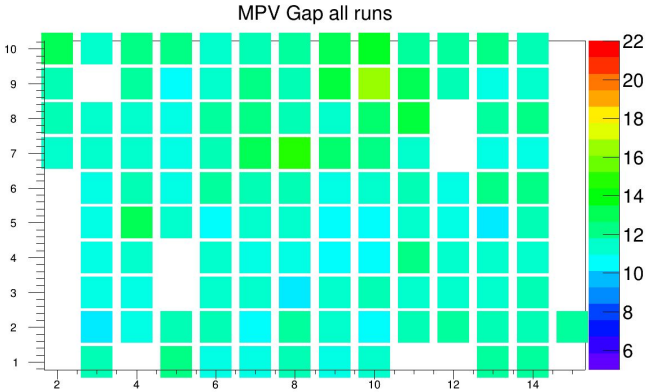
Homogeneity of response for sensor using all runs:Edges

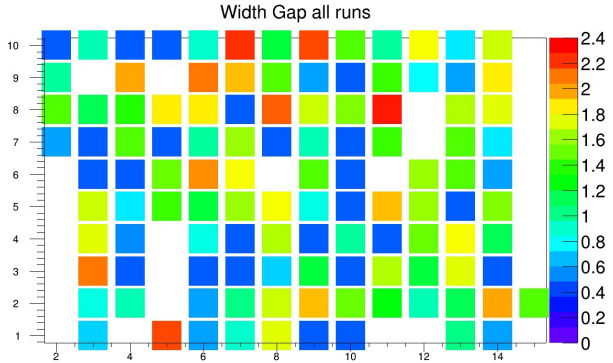


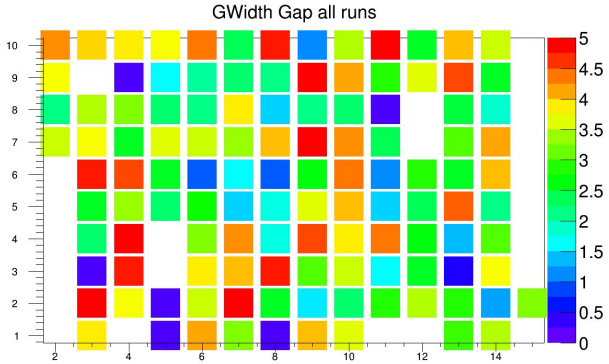




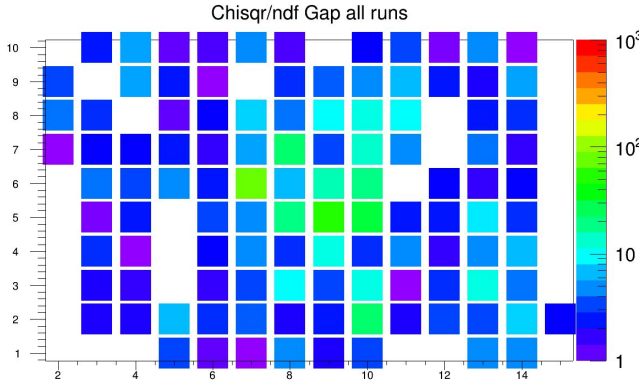
Homogeneity of response for sensor using all runs: Gap

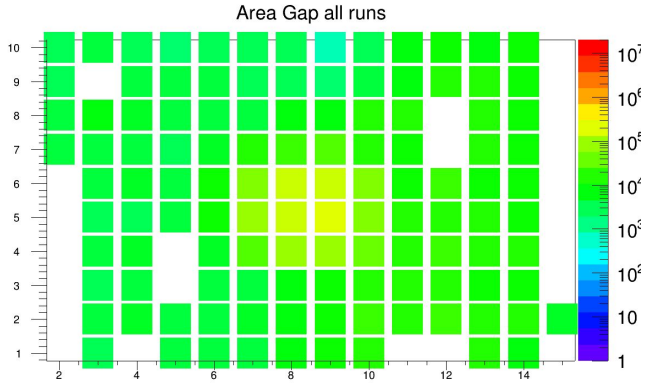


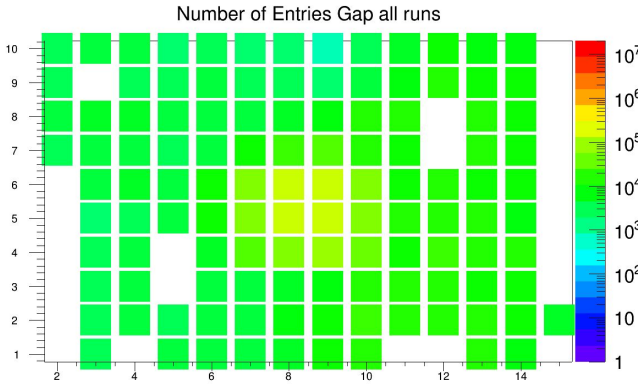




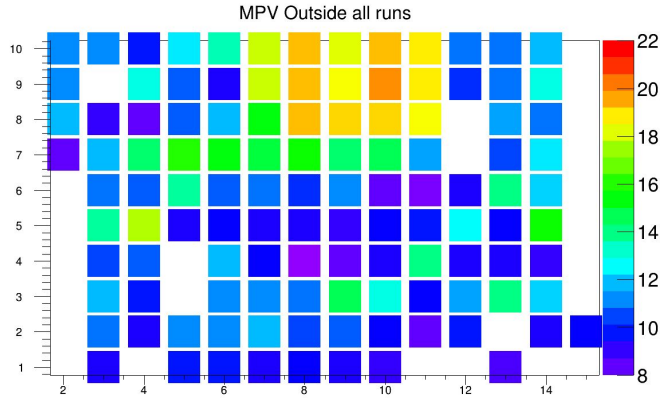
Homogeneity of response for sensor using all runs:Gap

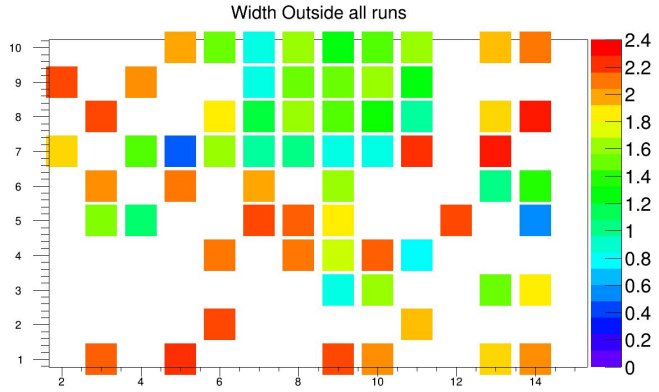


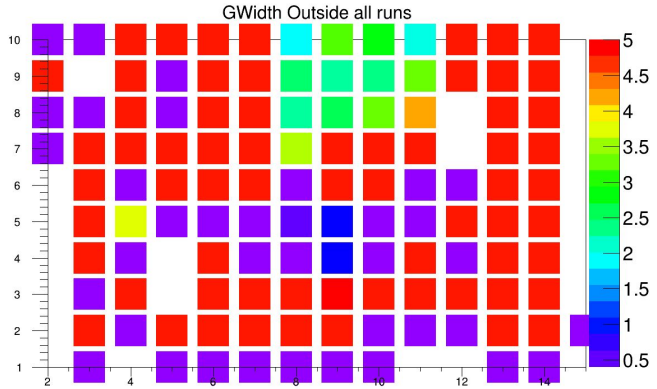




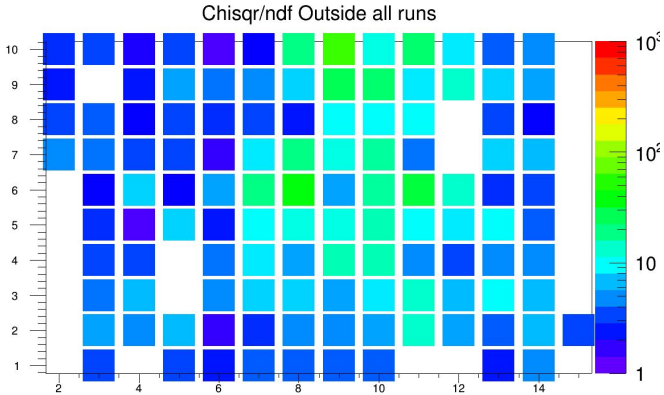
Homogeneity of response for sensor using all runs: Out

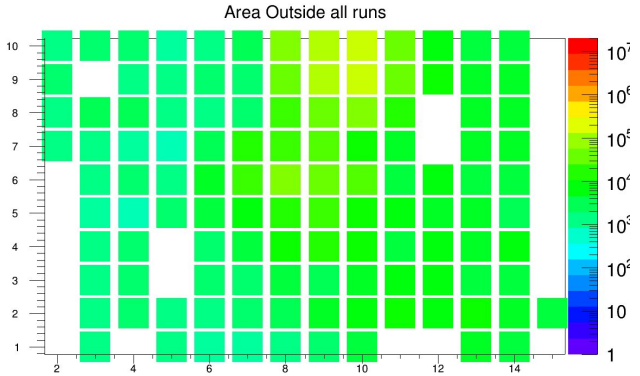


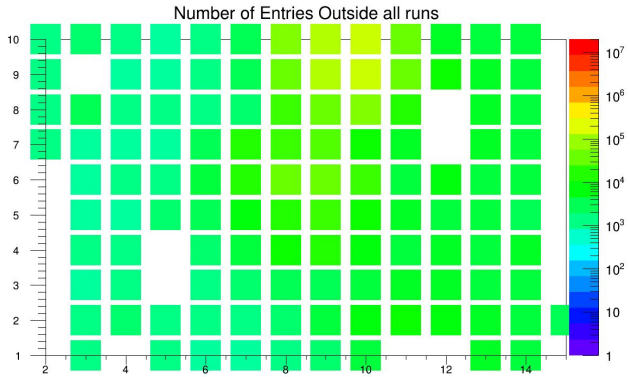




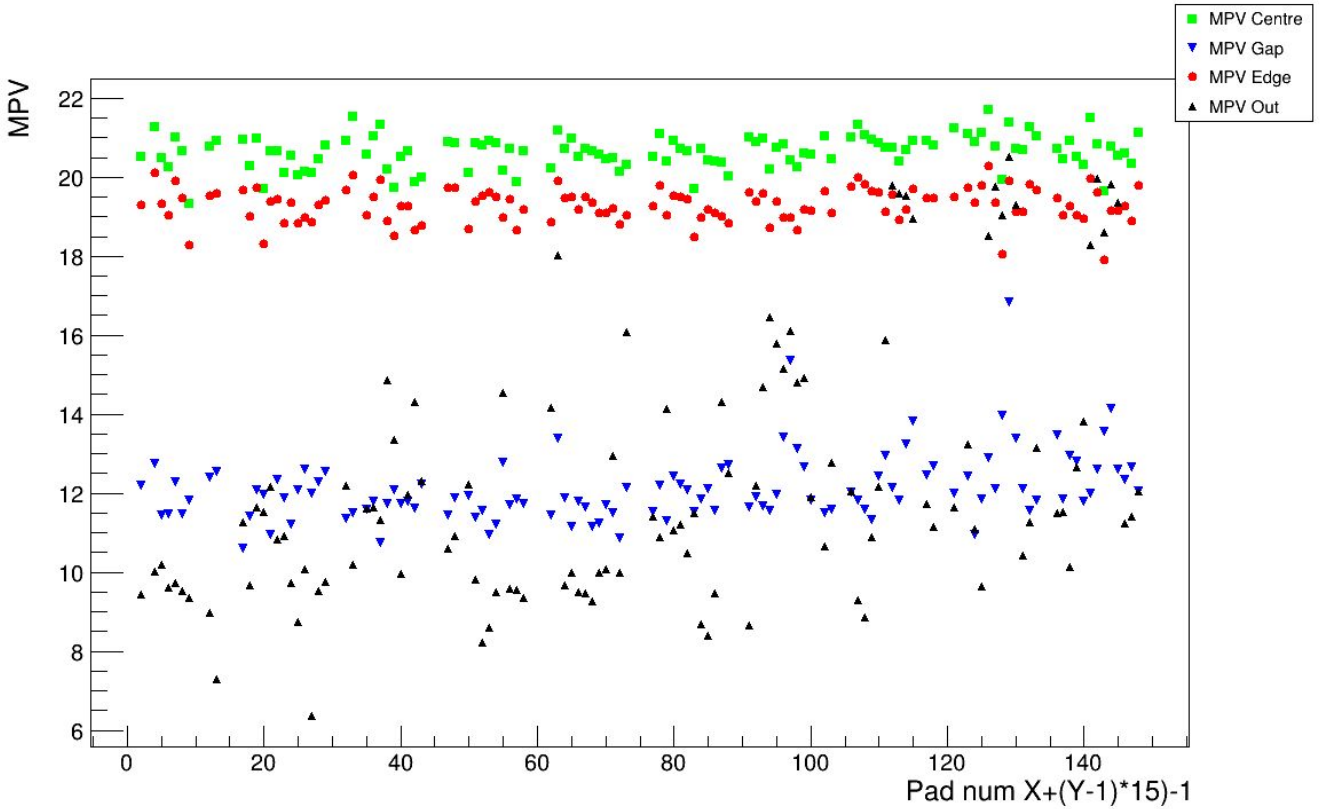
Homogeneity of response for sensor using all runs:Out



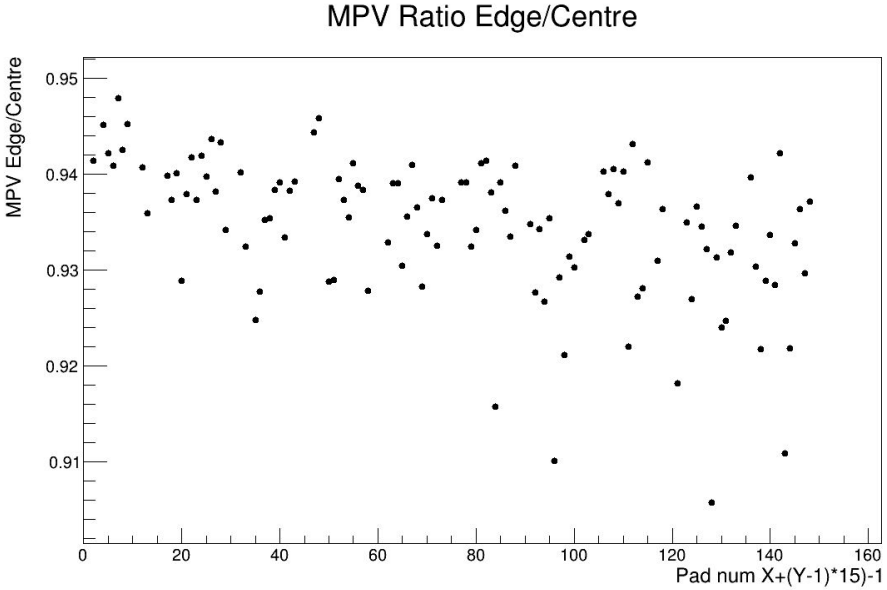


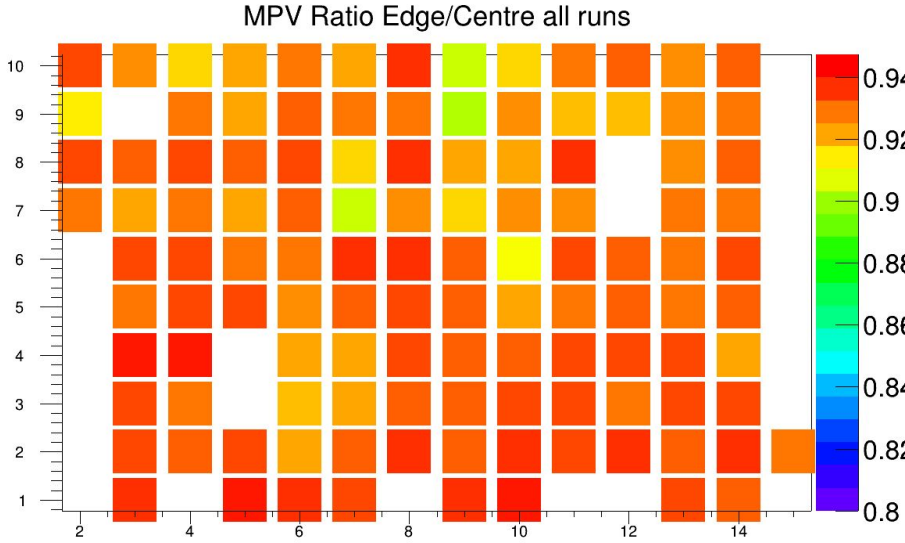


Summary of MPV for all areas 60

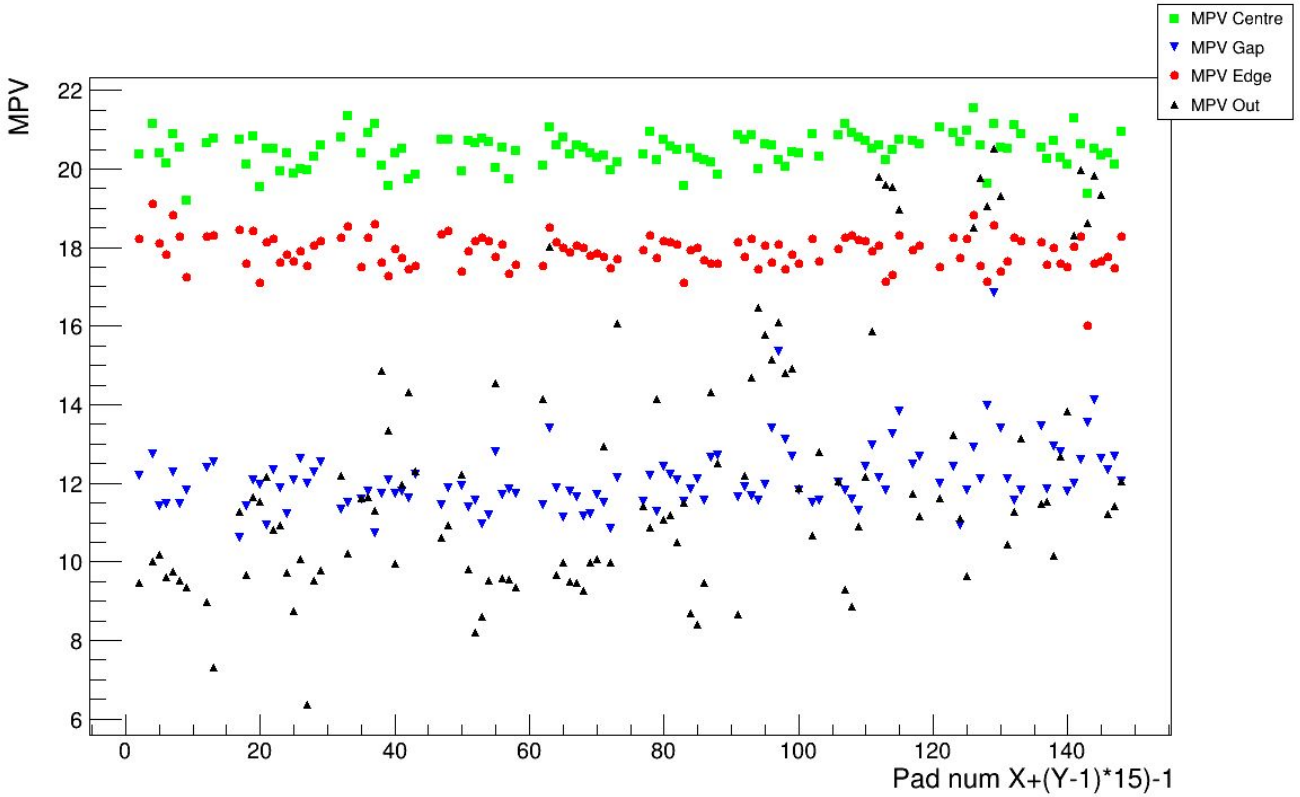


Ratio MPV 60

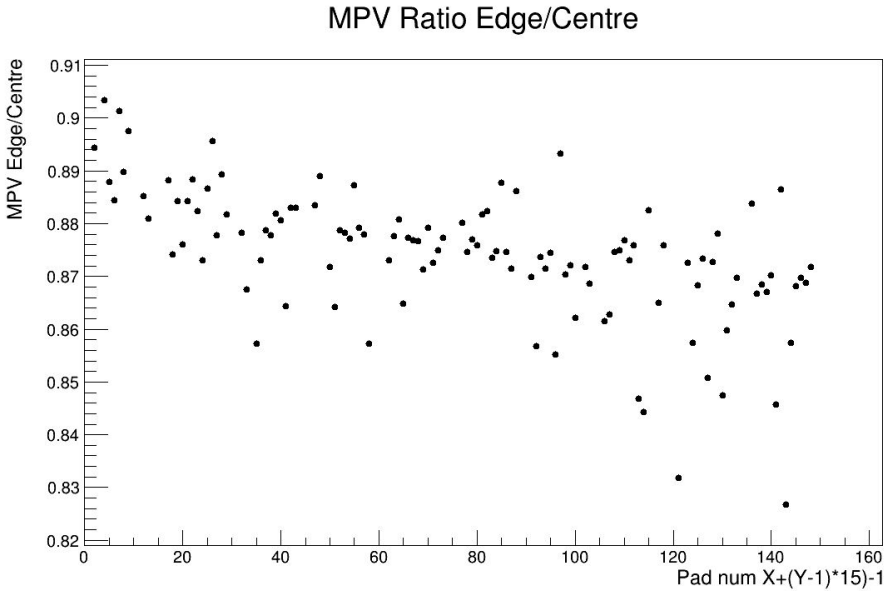

MPV Ratio Edge/Centre
MPV Edge/Centre
0.95
0.94
0.93
0.92
0.91
0
20
40
60
80
100
120
140
160
Pad num X+(Y-1)*15)-1

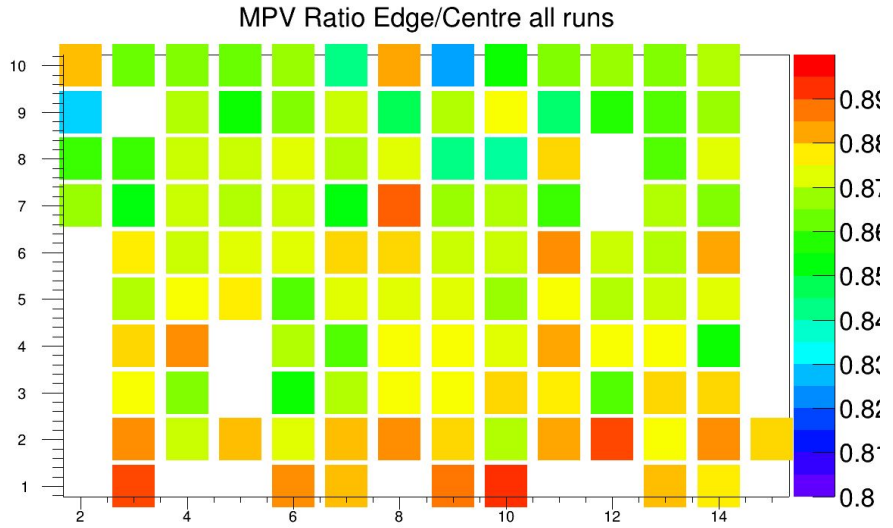

MPV Ratio Edge/Centre all runs
10
9
8
7
6
5
4
3
2
1
2
4
6
8
10
12
14
0.94
0.92
0.9
0.88
0.86
0.84
0.82
0.8

Summary of MPV for all areas 80



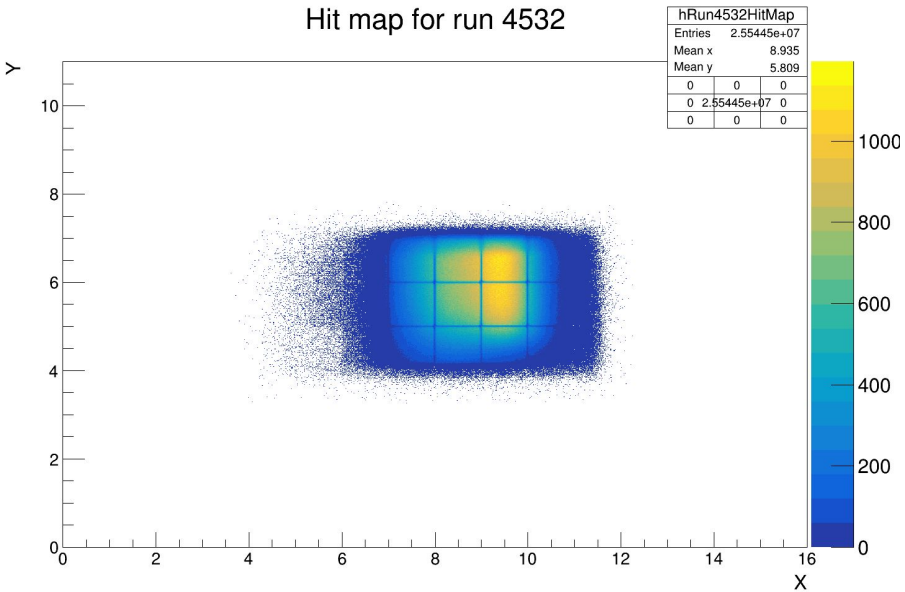
Ratio MPV 80


MPV Ratio Edge/Centre
MPV Edge/Centre
0.91
0.9
0.89
0.88
0.87
0.86
0.85
0.84
0.83
0.82
0
20
40
60
80
100
120
140
160
Pad num X+(Y-1)*15)-1

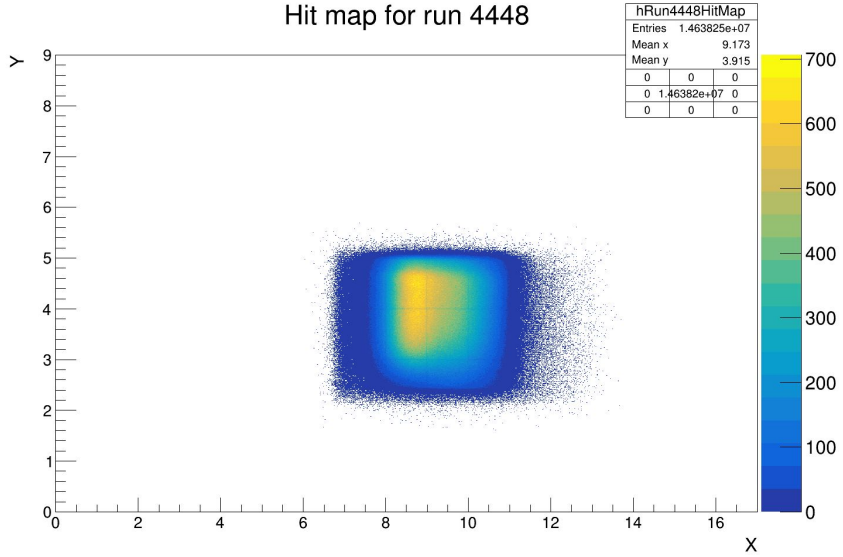

MPV Ratio Edge/Centre all runs
10
9
8
7
6
5
4
3
2
1
2
4
6
8
10
12
14
0.8

Hit map for long runs (one track, one fired pad)

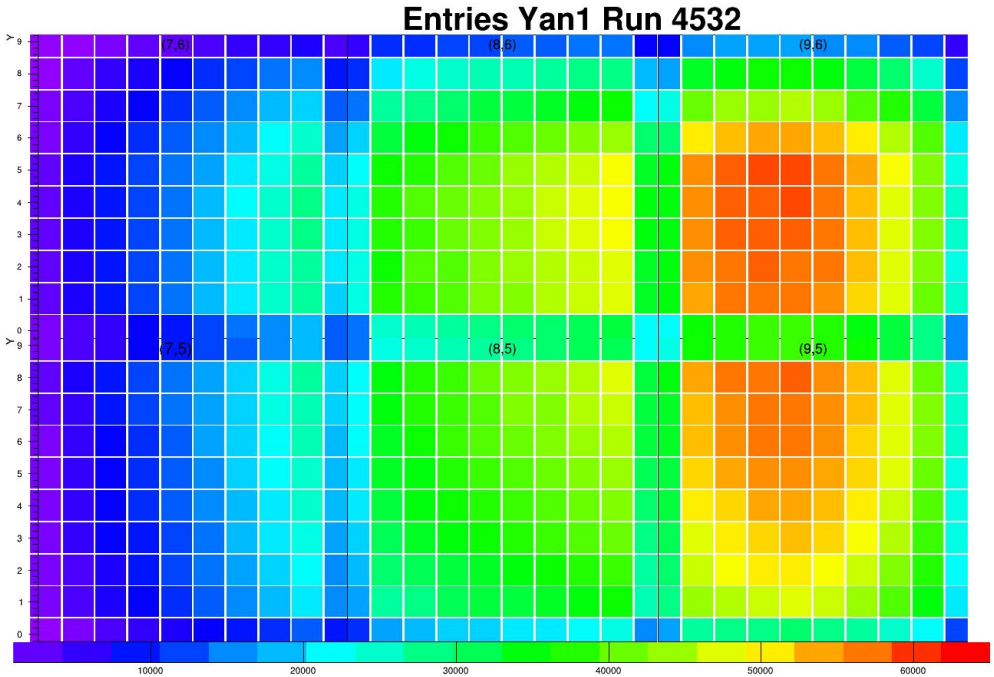
YAN1



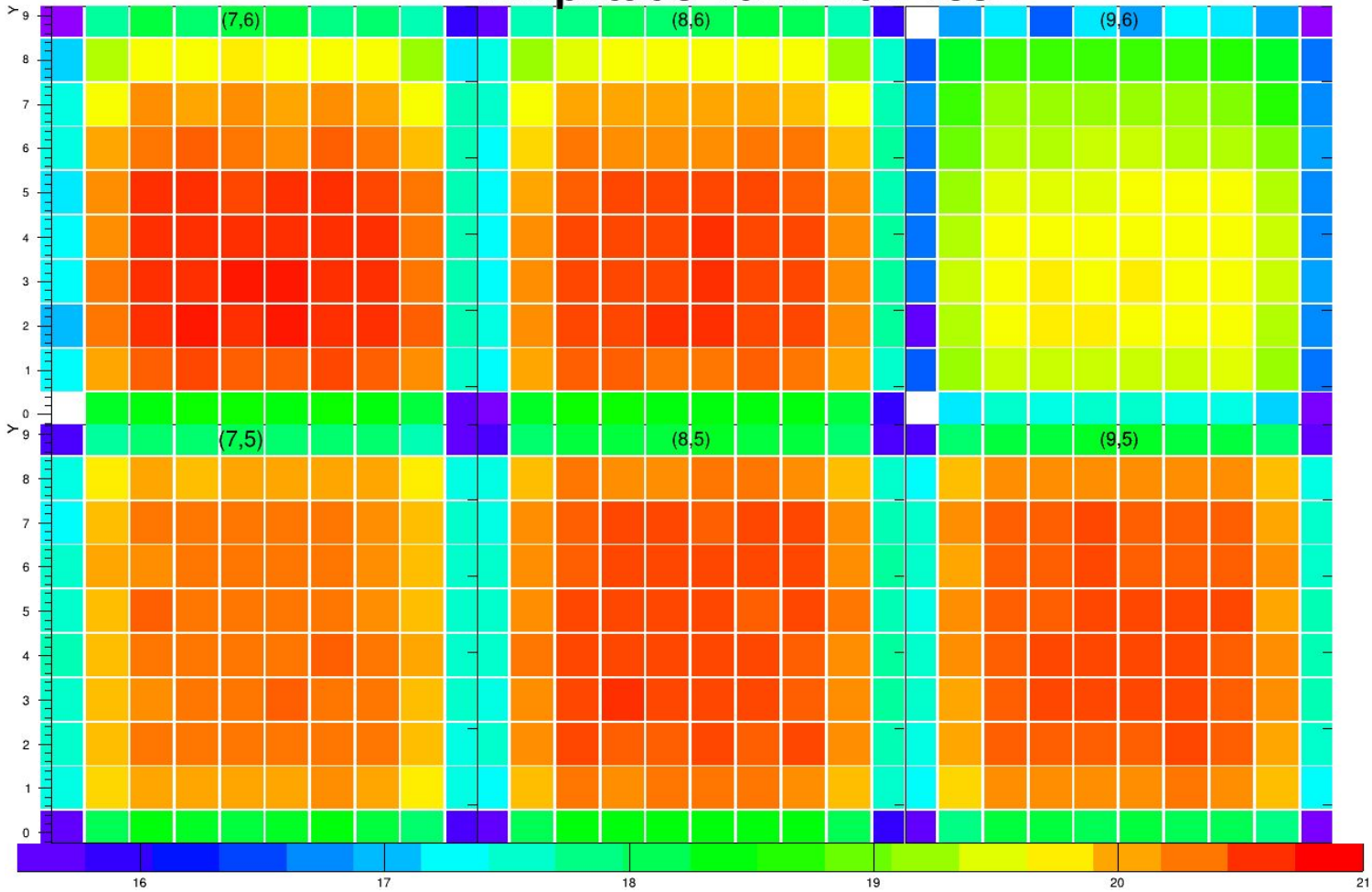
C75



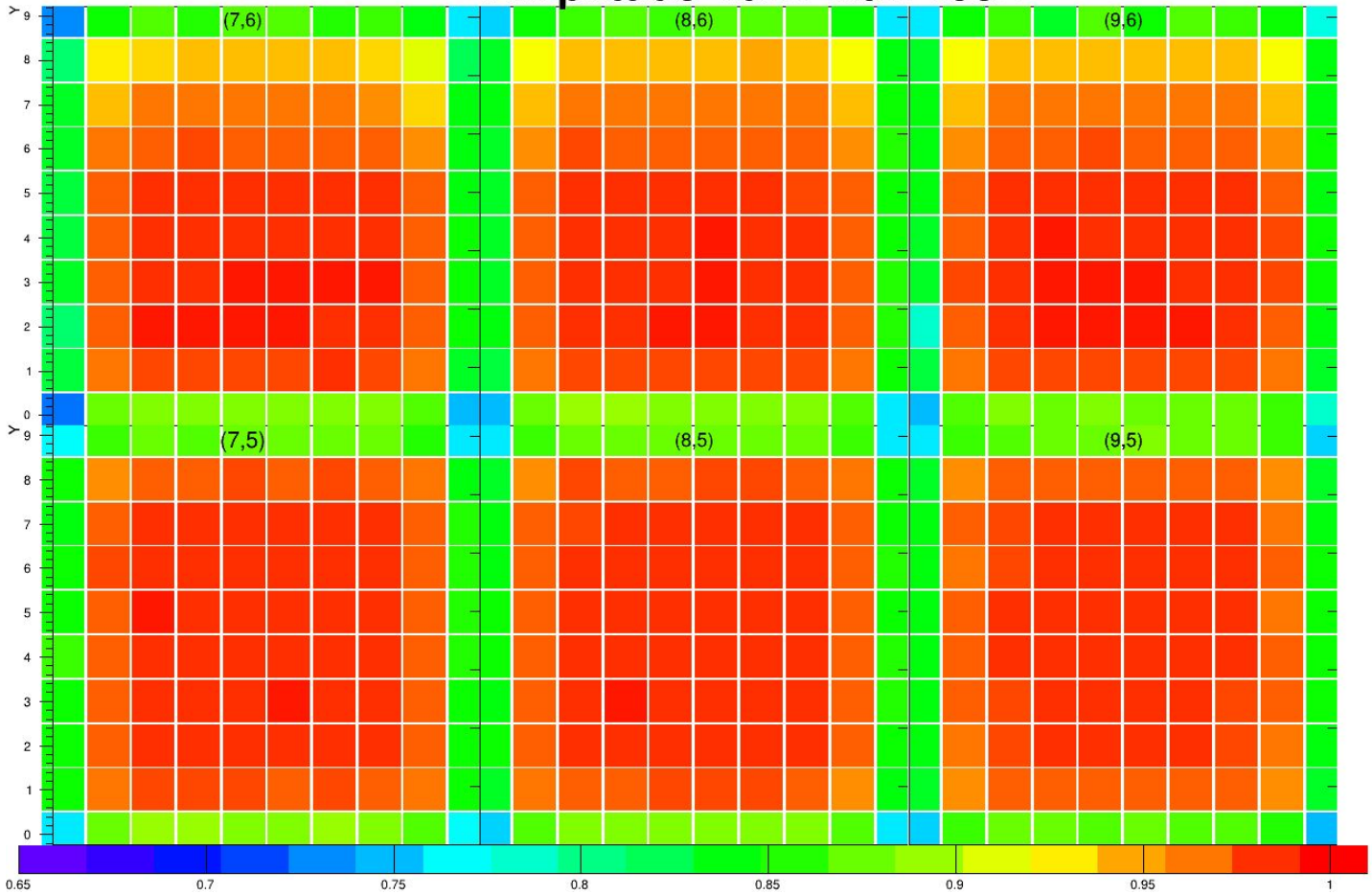
MPV Map for individual pads in one run

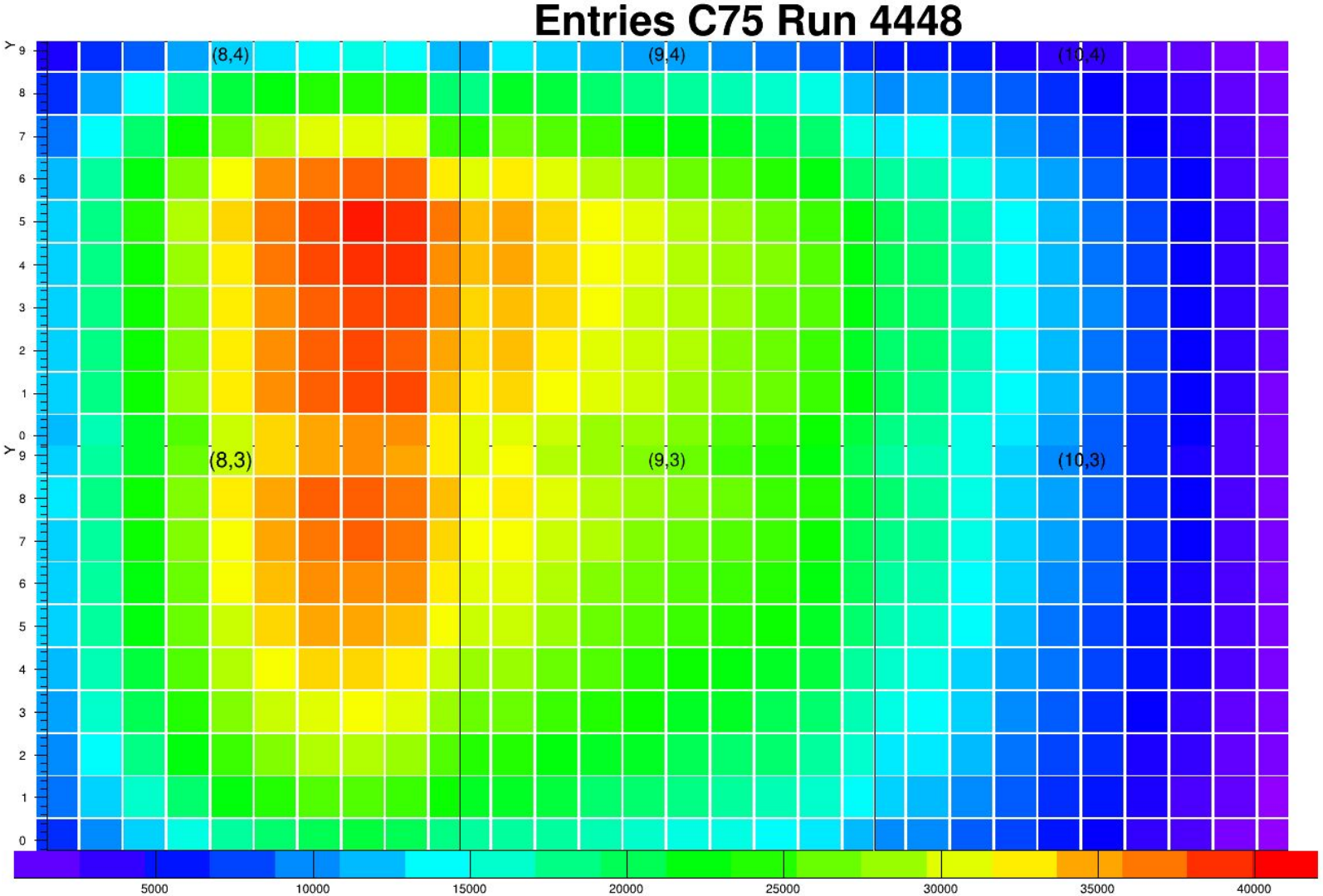


Amplitude Yan1 Run 4532

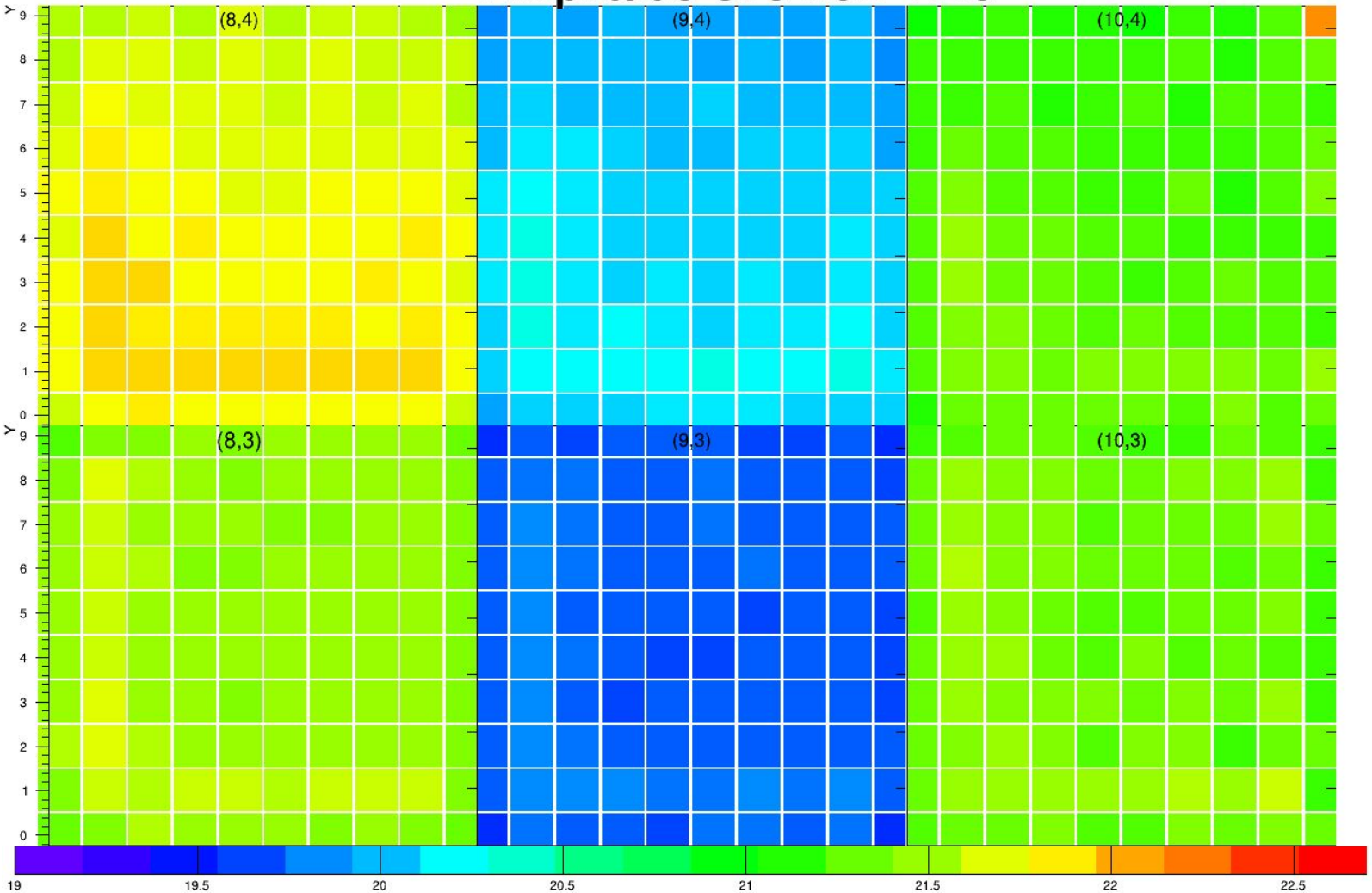


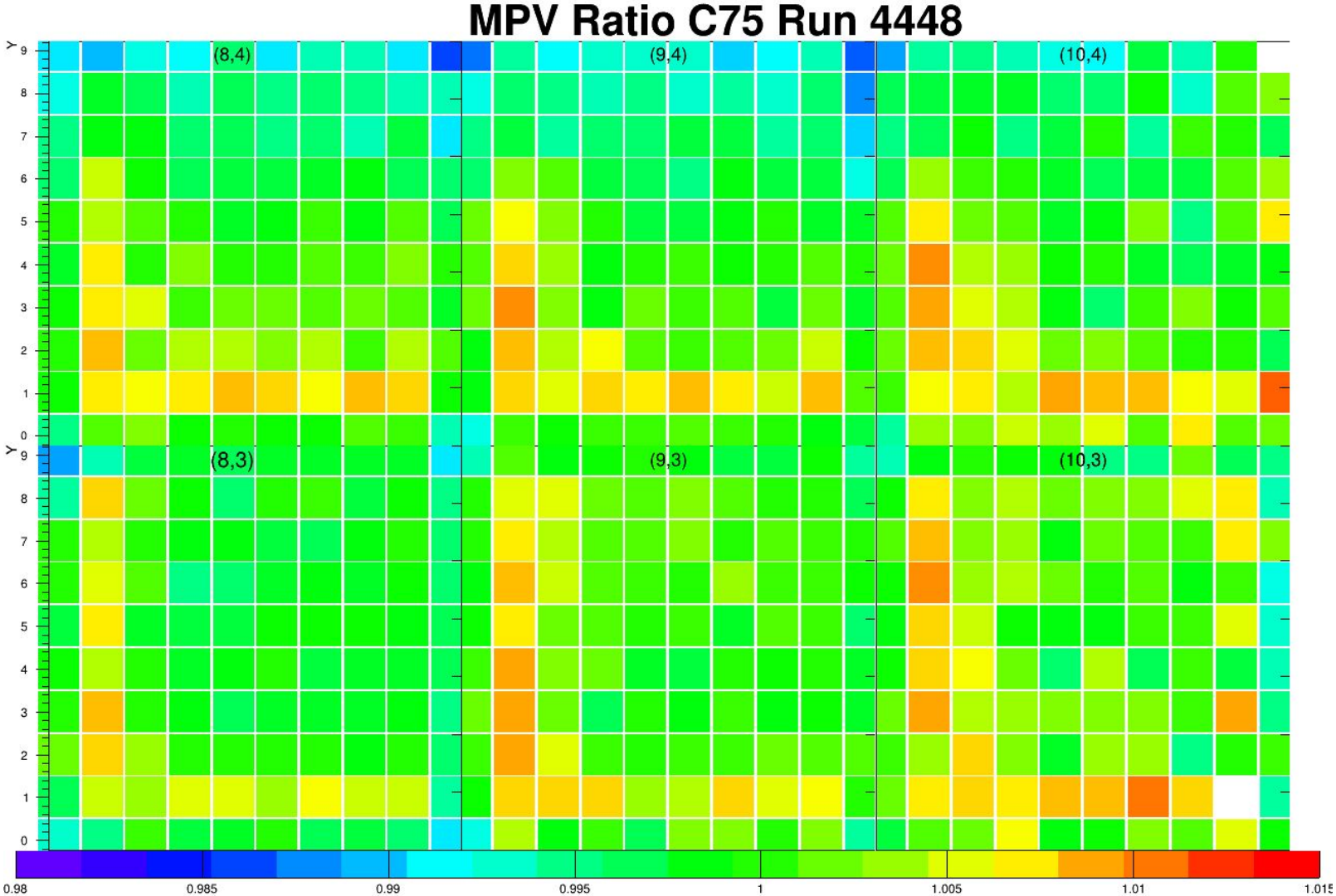
Amplitude Yan1 Run 4532




Entries C75 Run 4448
(8,4)
(9,4)
(10,4)
(8,3)
(9,3)
(10,3)
Y
5000
10000
15000
20000
25000
30000
35000
40000

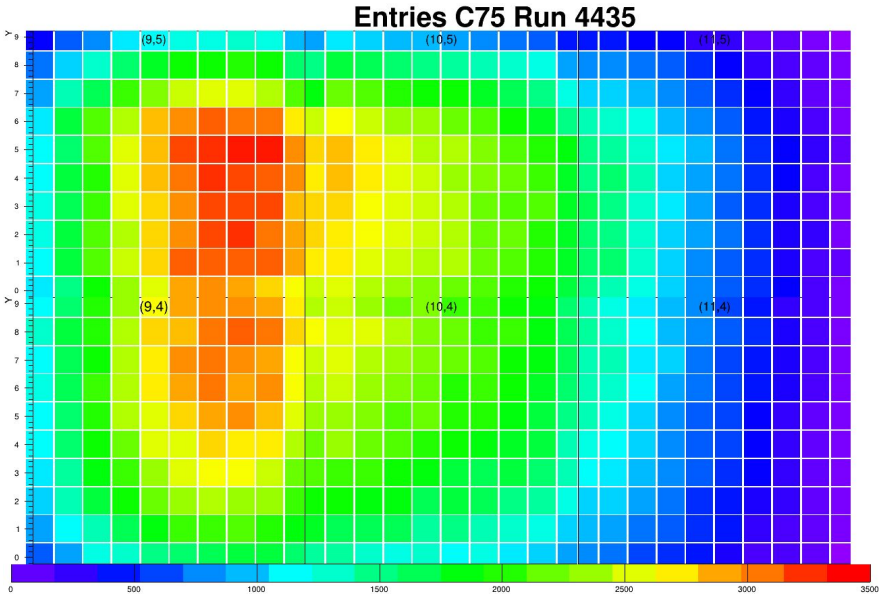
Amplitude C75 Run 4448

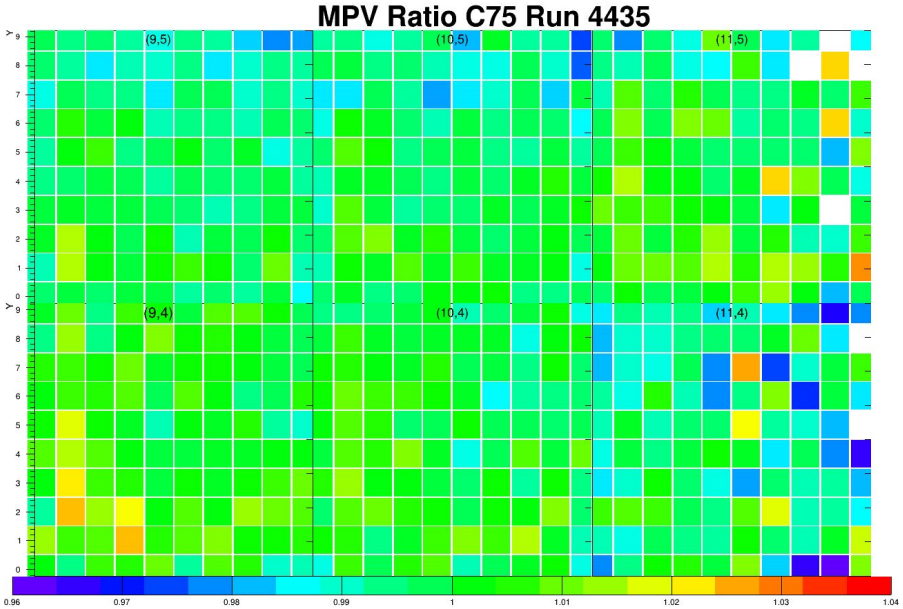


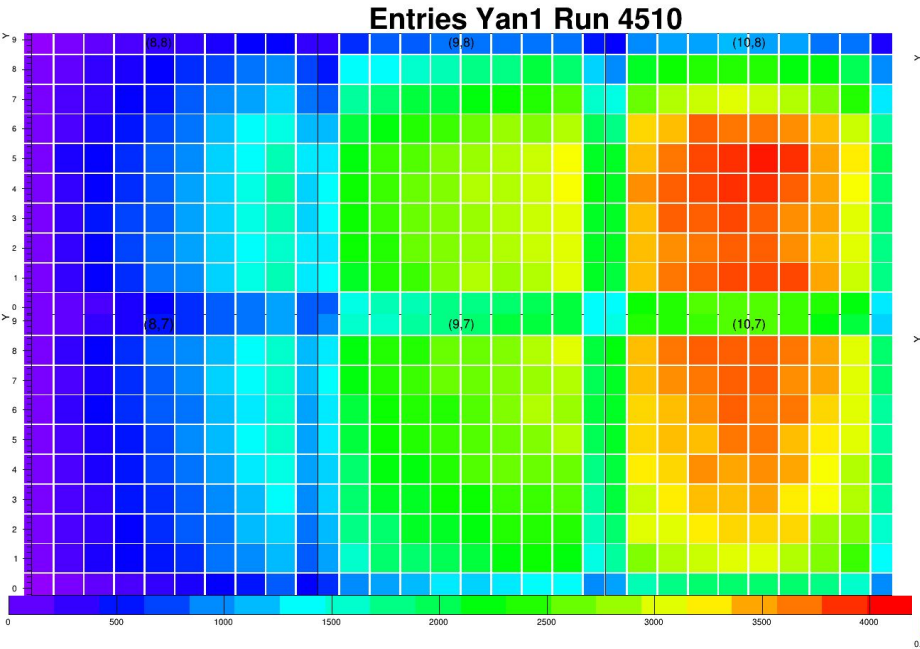

MPV Ratio C75 Run 4448
(8,4)
(9,4)
(10,4)
(8,3)
(9,3)
(10,3)
Y
0
1
2
3
4
5
6
7
8
9
0.98
0.985
0.99
0.995
1
1.005
1.01
1.015

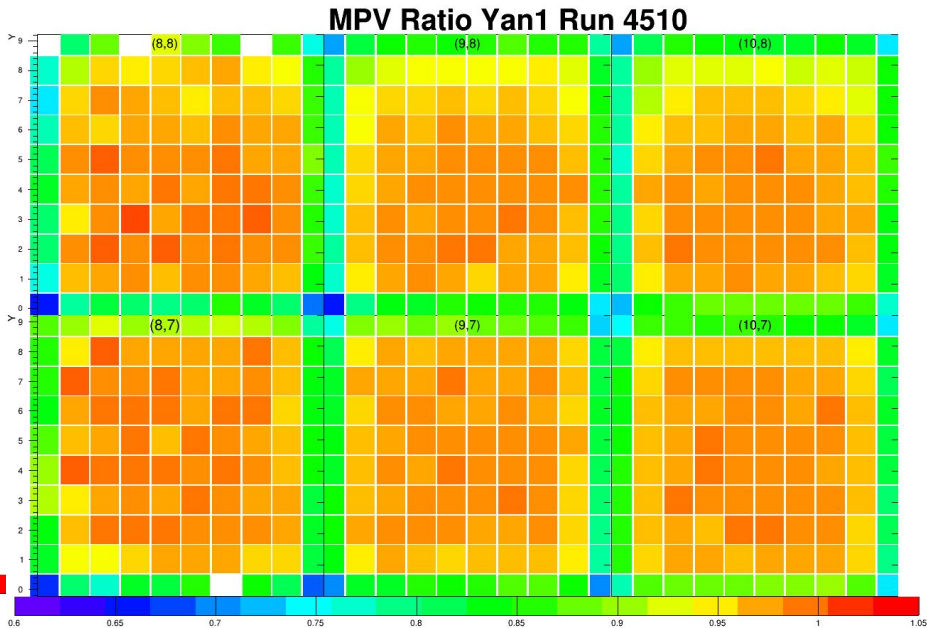
Thank you!

Backup


Entries C75 Run 4435
(9,5)
(10,5)
(11,5)
(9,4)
(10,4)
(11,4)
0
500
1000
1500
2000
2500
3000
3500


MPV Ratio C75 Run 4435
(9,5)
(10,5)
(11,5)
(9,4)
(10,4)
(11,4)
0.96
0.97
0.98
0.99
1
1.01
1.02
1.03
1.04


Entries Yan1 Run 4510
(8,8)
(9,8)
(10,8)
(8,7)
(9,7)
(10,7)
0
500
1000
1500
2000
2500
3000
3500
4000


MPV Ratio Yan1 Run 4510
(8,8)
(9,8)
(10,8)
(8,7)
(9,7)
(10,7)
0.6
0.65
0.7
0.75
0.8
0.85
0.9
0.95
1
1.05