Status of Light Injection at FarDet

Leo Jenner

Parallel Talk

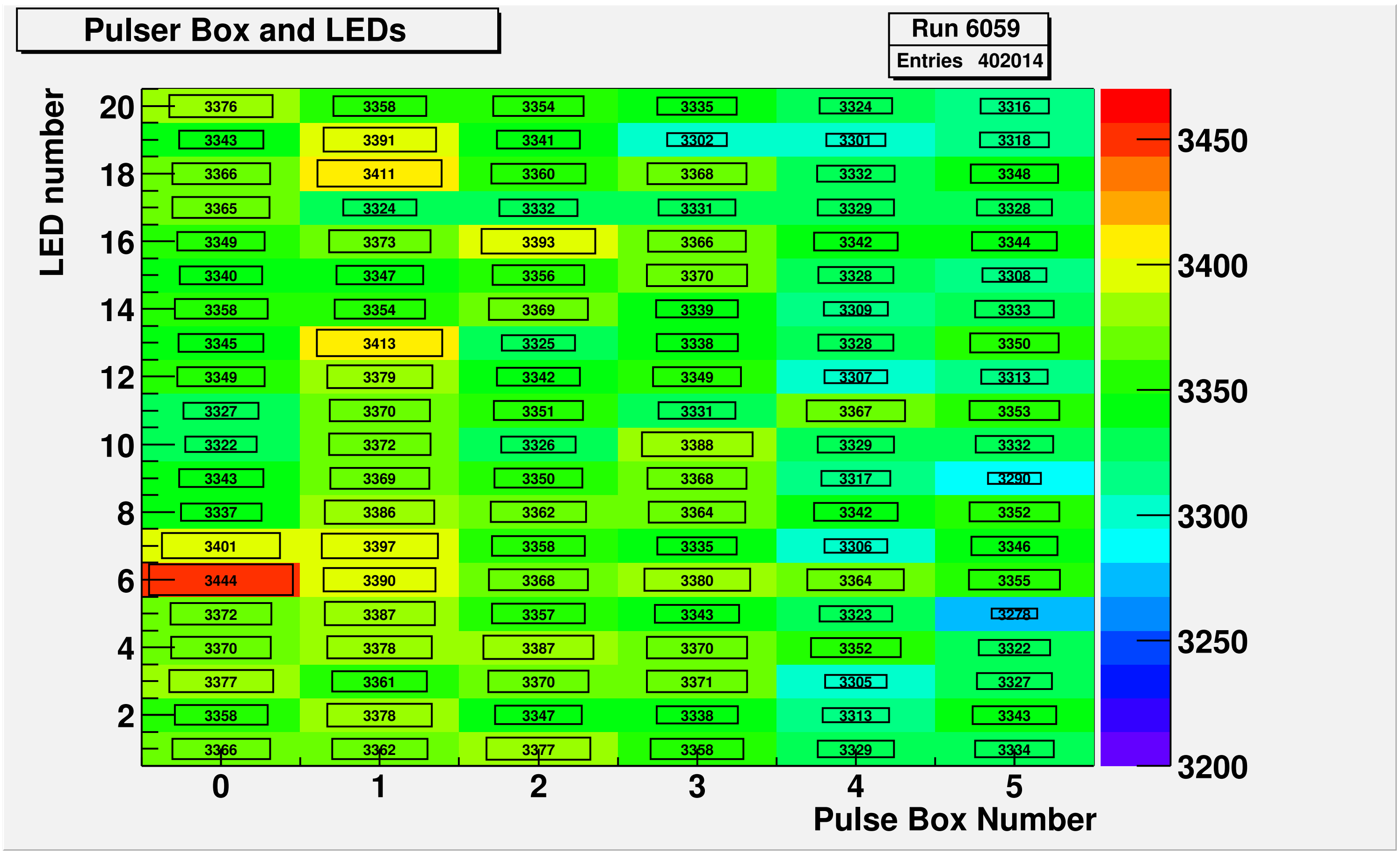
University College London

Preview

- **Pulser Boxes:** 5 & 6 now online.
- **Light Levels:** Lots of Light!
- **Swapped Fibres:** Most of the problems we see at the FarDet are a result of light injection fibres being plugged in the wrong way round in the LIMs.
- **Mine Crew vs OMC:** 2:1
- **More Complicated Things:** Mux Box / Read out Cables.
- **Next...**

Pulser Boxes

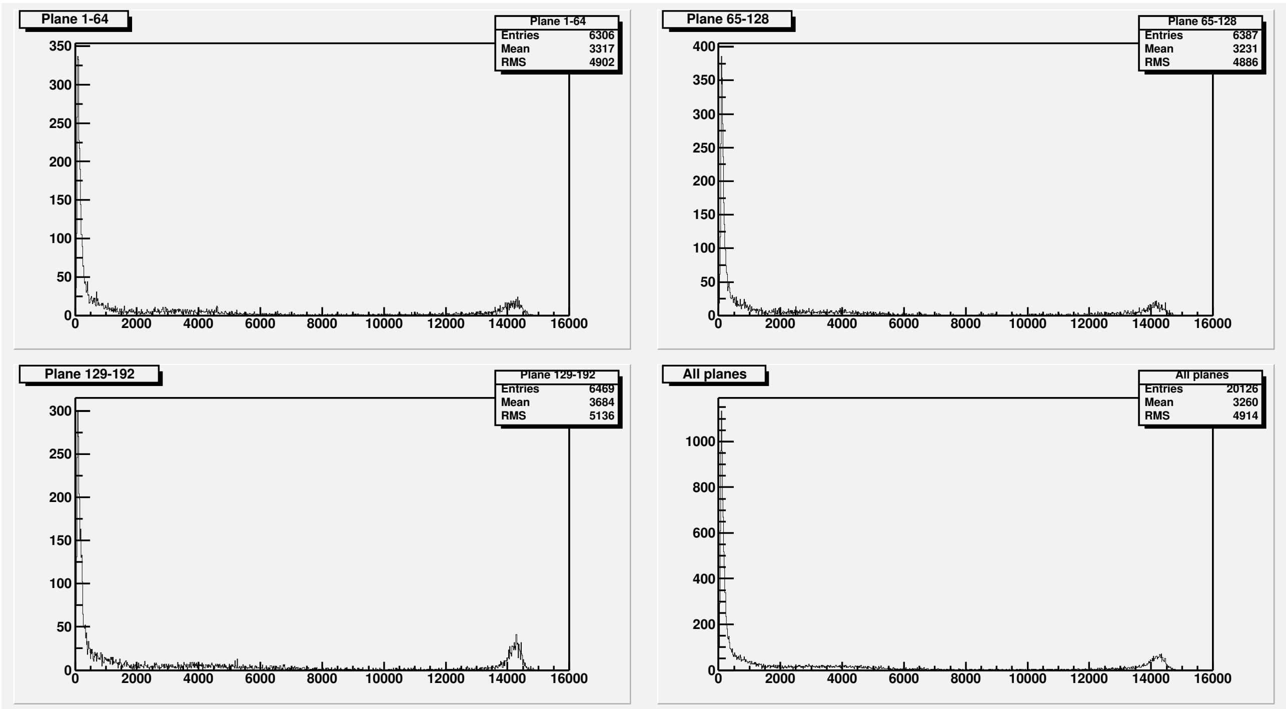
- 6 pulser boxes in total

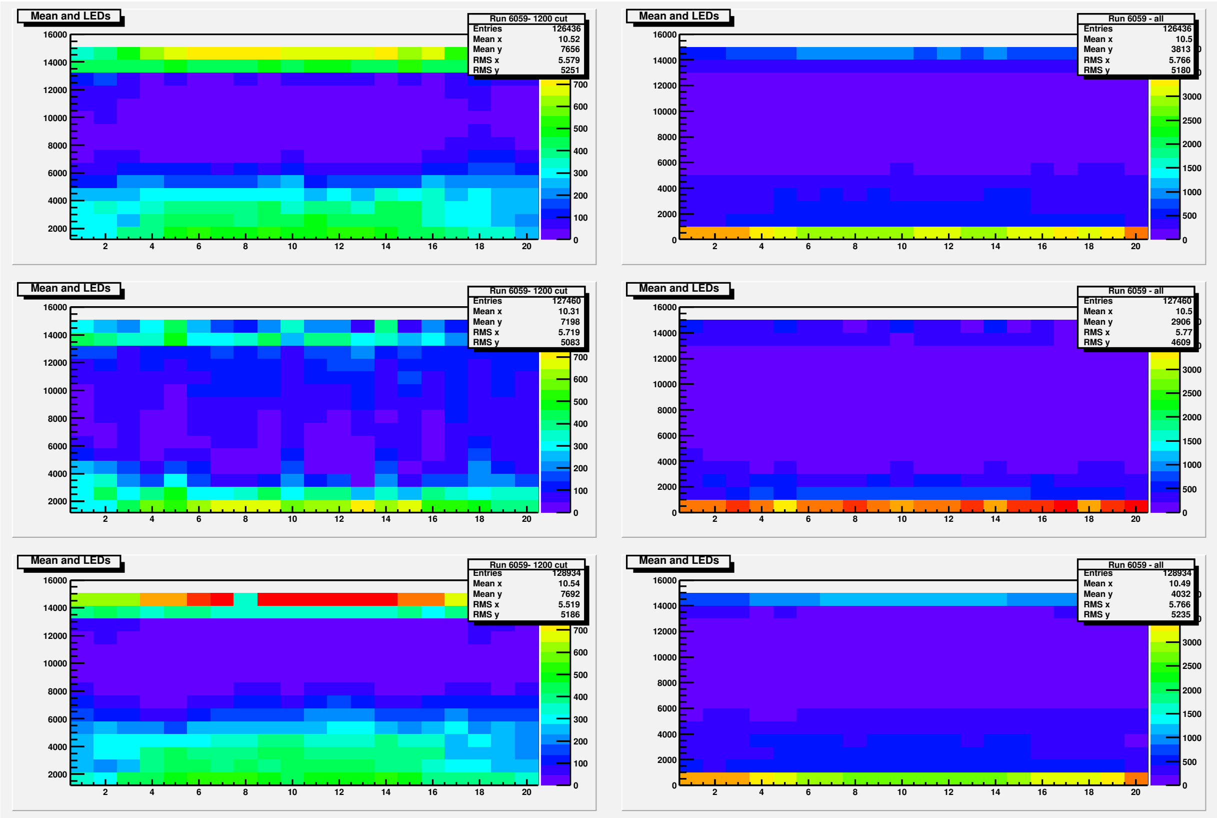


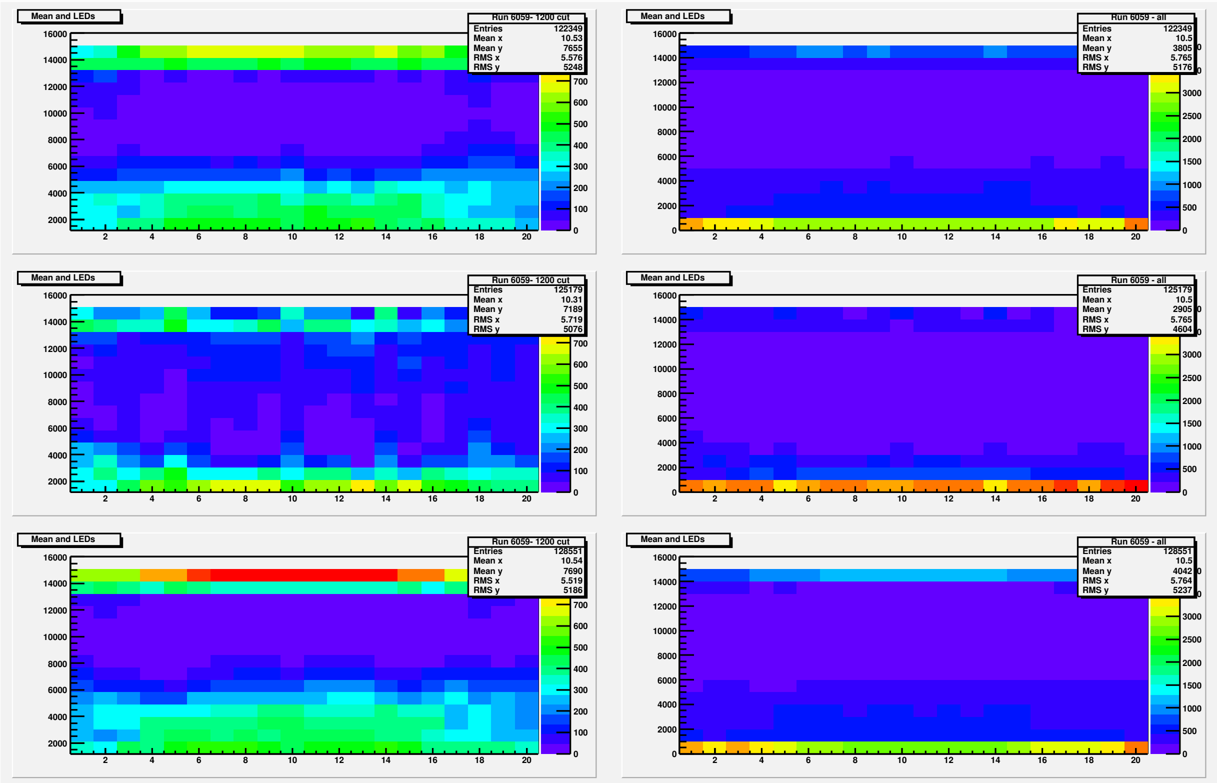
- Planes 1 -> 192

Light Levels

- New LEDs
- Pulse Height: 400

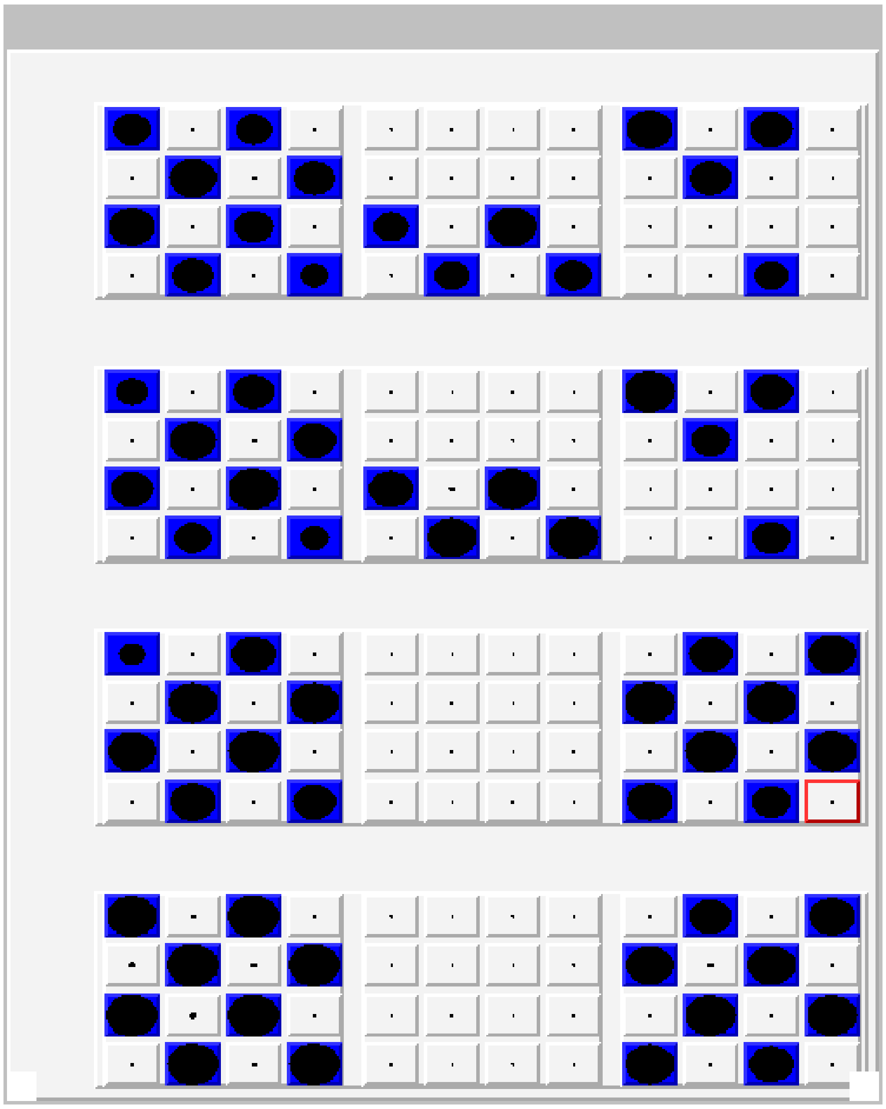



Mean and LEDs
Run 6059- 1200 cut
Entries 126436
Mean x 10.52
Mean y 7656
RMS x 5.579
RMS y 5251
Mean and LEDs
Run 6059 - all
Entries 126436
Mean x 10.5
Mean y 3813
RMS x 5.766
RMS y 5180
Mean and LEDs
Run 6059- 1200 cut
Entries 127460
Mean x 10.31
Mean y 7198
RMS x 5.719
RMS y 5083
Mean and LEDs
Run 6059 - all
Entries 127460
Mean x 10.5
Mean y 2906
RMS x 5.77
RMS y 4609
Mean and LEDs
Run 6059- 1200 cut
Entries 128934
Mean x 10.54
Mean y 7692
RMS x 5.519
RMS y 5186
Mean and LEDs
Run 6059 - all
Entries 128934
Mean x 10.49
Mean y 4032
RMS x 5.766
RMS y 5235

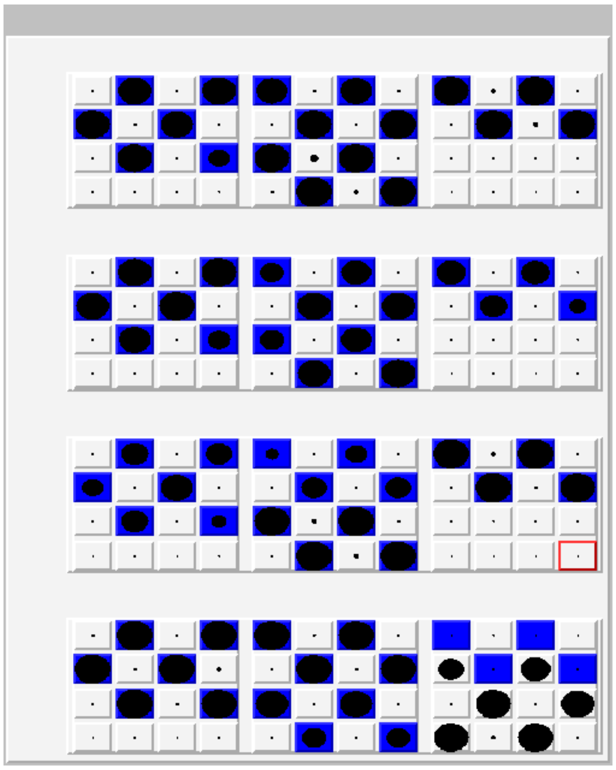

Mean and LEDs
Run 6059- 1200 cut
Entries 122349
Mean x 10.53
Mean y 7655
RMS x 5.576
RMS y 5248
Mean and LEDs
Run 6059 - all
Entries 122349
Mean x 10.5
Mean y 3805
RMS x 5.765
RMS y 5176
Mean and LEDs
Run 6059- 1200 cut
Entries 125179
Mean x 10.31
Mean y 7189
RMS x 5.719
RMS y 5076
Mean and LEDs
Run 6059 - all
Entries 125179
Mean x 10.5
Mean y 2905
RMS x 5.765
RMS y 4604
Mean and LEDs
Run 6059- 1200 cut
Entries 128551
Mean x 10.54
Mean y 7690
RMS x 5.519
RMS y 5186
Mean and LEDs
Run 6059 - all
Entries 128551
Mean x 10.5
Mean y 4042
RMS x 5.764
RMS y 5237

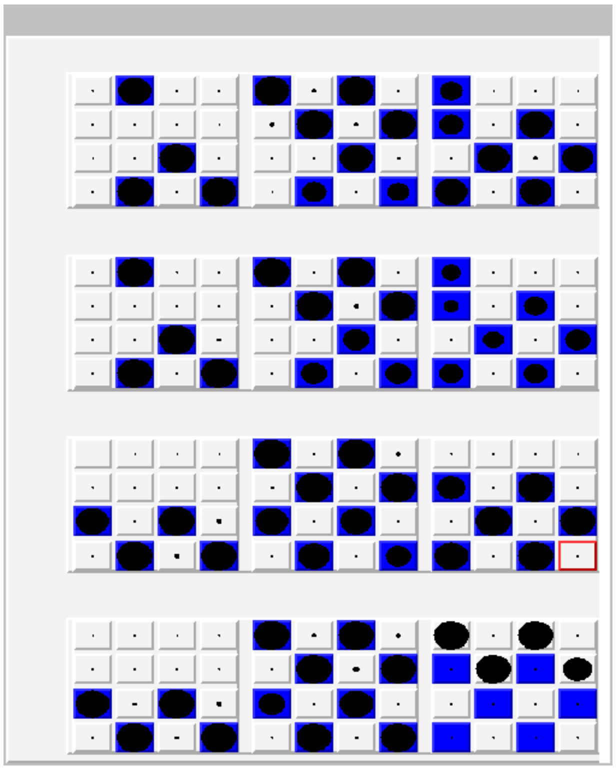
Swapped Fibres

- Fibres in wrong LIMs
- Can fix with software but more crosstalk
- Fibres in the right place look like this...



- Fibres in the wrong place look like this...





LED	Planeloc	A/B	Module	Status
(2)1 & (4)3	w3	B	mod1	
13 & 14	w2	A	mod6	
(19)18 & (20)19	e3	B	mod8	
(19)18 & (20)19	w3	B	mod8	fixed
15 & 17	w14	A	mod7	
(14)13 & (15)14	w20	B	mod6	
18, 19, 20	w42	A	mod8	I made this!
(2)1 & (4)3	e60	B	mod1	
(5)4 & (7)6	e60	B	mod2	in progress
(8)7 & (9)8	e60	B	mod3	in progress
(2)1 & (4)3	e64	B	mod1	
(12)11 & (13)12	w68	B	mod5	
(14)13 & (15)14	w68	B	mod6	
led (5)4 & (6)5	e75	B	mod2	
led 18 & 20	w90	A	mod8	
led 13 & 14	e106	A	mod 6	fixed
led 5&6	e108	B	mod 2	in progress
led (1)20 and (19)18	w108	B	mod8	
110 (*)				in progress
114 (*)				in progress
led (8)7 and (9)8	e119	B	mod 3	
led 1 and 2	w133	A	mod1	
led 15 & 17	e137	A	mod7	
led 9 and 10	e150	A	mod4	in progress
led 15 and 16	w158	A	mod7	
led 15 and 17	w166	A	mod7	
led 18 and 20	w166	A	mod8	
led 9 and 10	e170	A	mod4	
led 16 17 18 (@)	w171	B	mod7	fixed
led (10,11) 9 10	e183	B	mod4	
e189 (*)				in progress

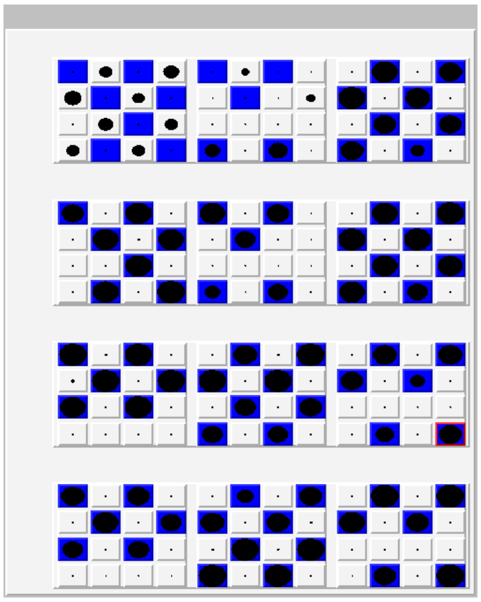
@) 16->18 17->16

*) mux, readout cable -> swap out readout cable (see if better) check out serial numbers on mux boxes (same place/same time?)

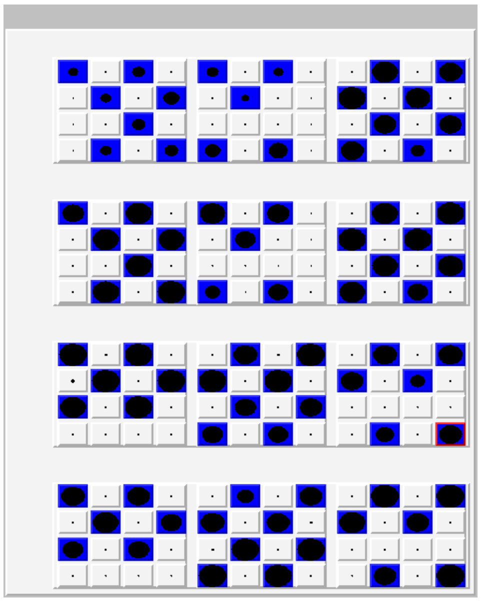
- 27 fibres need swapping out of 40 fibres x 192 planes = 7680 (0.35%)

Fixed!

- Before (Run 6059 - Planes 107-110, Led 13)...



- After (Run 6210 - Planes 107-110, Led 13)...



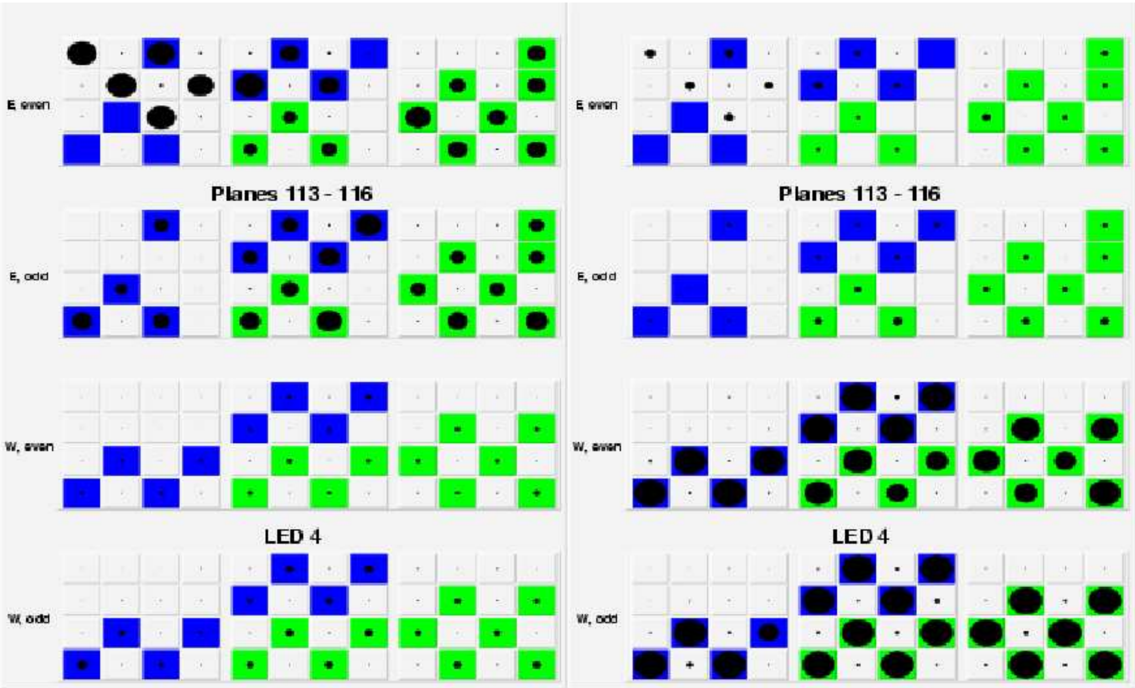
Mine Crew vs OMC

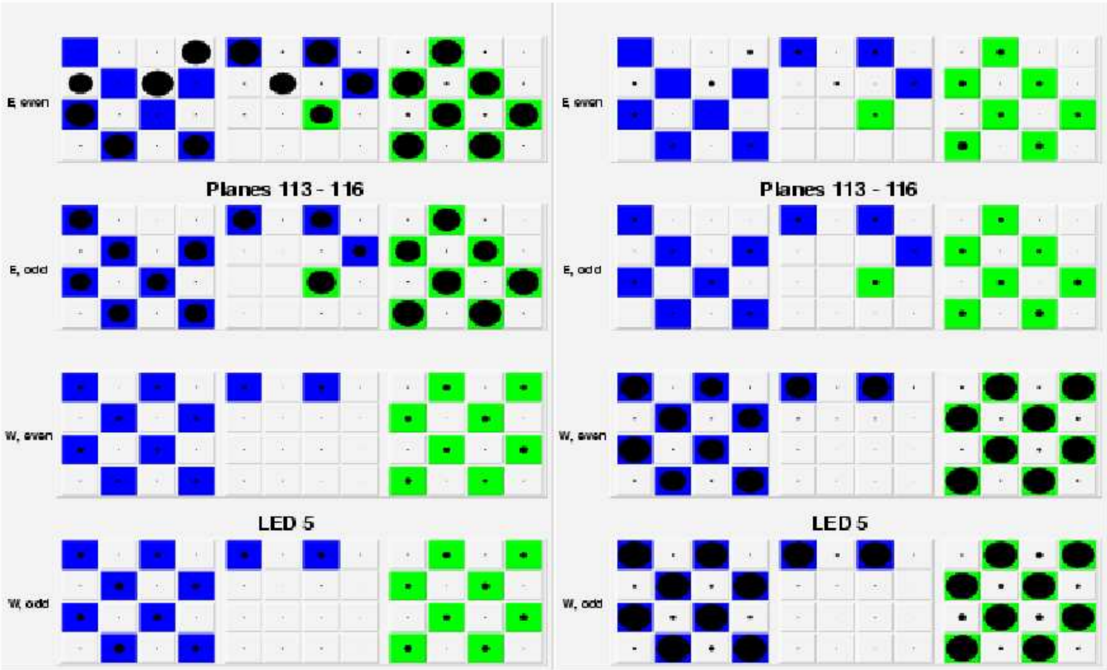
- Easy to put fibres in wrong place
- OMC may mis-wire or mis-label the fibres

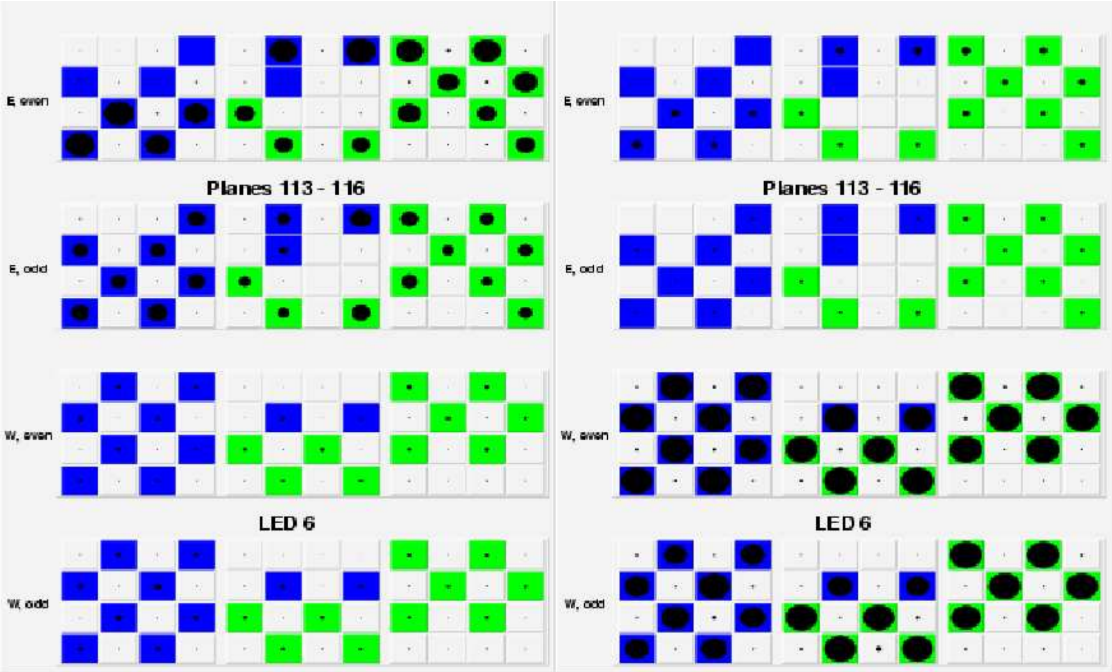
- OMC 1 : CREW 2

- Fibres under shield being re-cabled now

More Complicated Problems

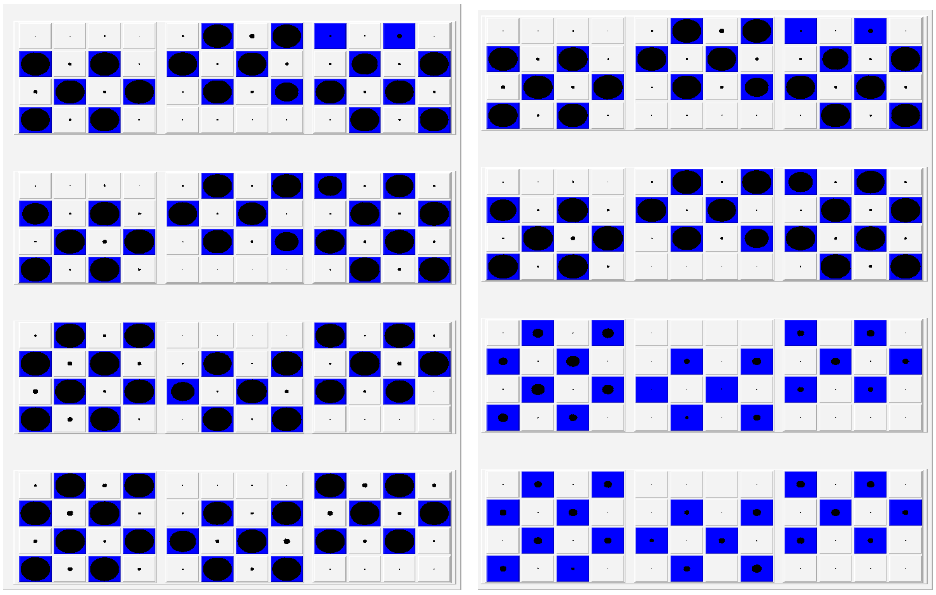




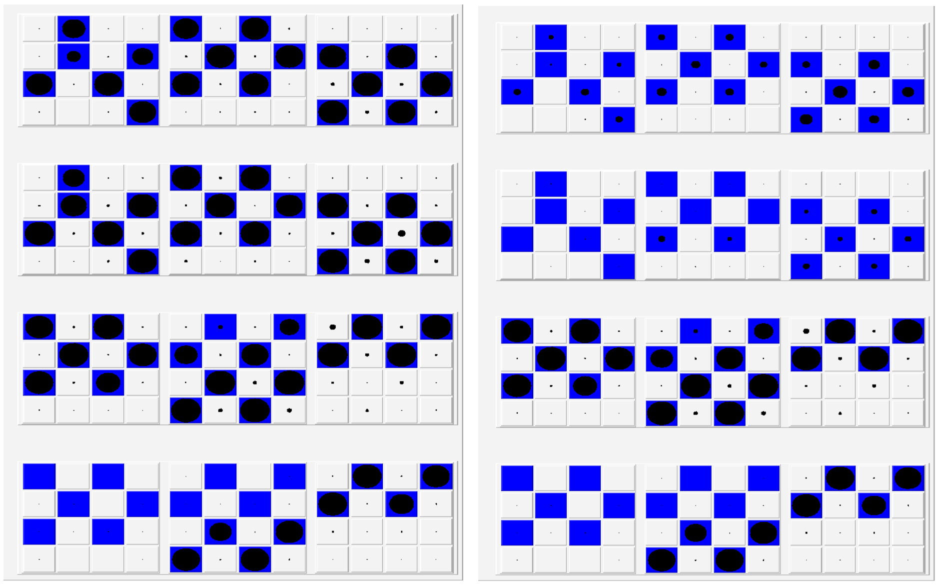


- The patterns don't easily match
- Mux box -> Plane out

Other Problems



- Plane 1, Led 12 - broken fibre in scintillator?



- Plane 1, Led 18 - LI cable not connected or broken?

Next...

- Swap cables
- Check all channels
- Adjust pin sparsification threshold to cut down noise
- Connect last two pulser boxes of SM1
- Hand over to Jing at the end of the month