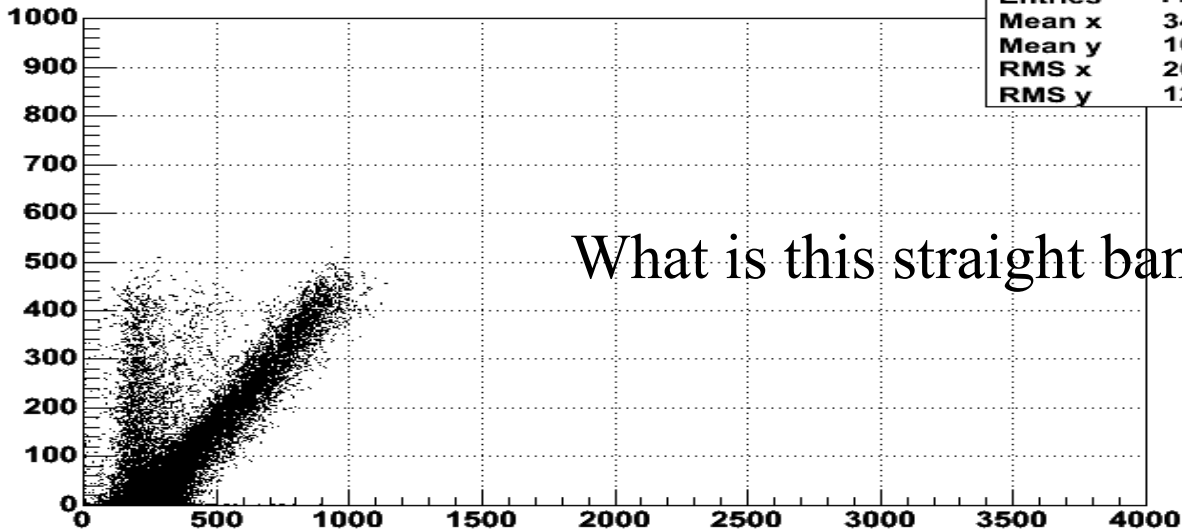


## **Barrel PreShower Detector (towards understanding)**

- **Where Jaro left..**
- **Some more info for completeness**
- **Back to Barrel-PSD correlation**
- **Fixing from observations**
- **Looking back how mapping is done**
- **Do we understand?**

# Plot for correlation of RefMultiplicity and PSDNhit

2D for psd vs refmult



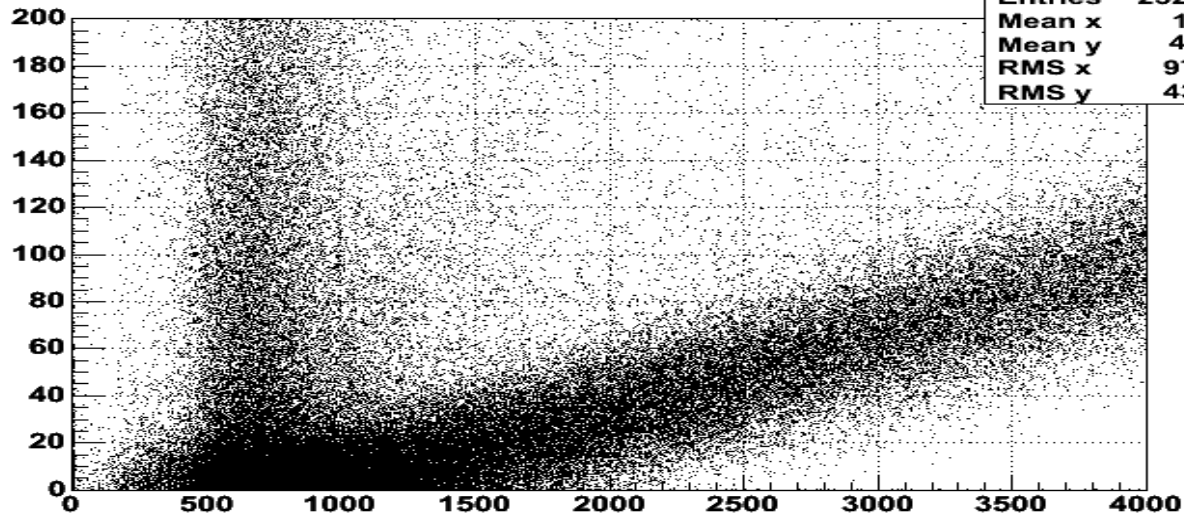
Psd_refmult	
Entries	44444
Mean x	346.5
Mean y	104.6
RMS x	200.5
RMS y	120.5

What is this straight band?

Wed Dec 1 12:48:55 2004

# Plot for Tower Total energy vs PreShower total ADC

2D for tower vs Psd E

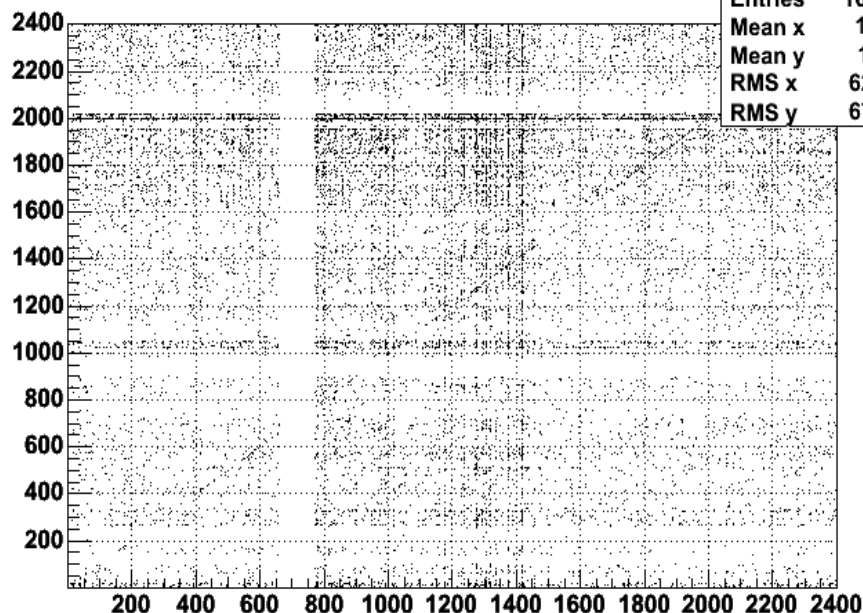


Psd_tower_E	
Entries	232648
Mean x	1555
Mean y	44.11
RMS x	975.6
RMS y	43.05

Wed Dec 1 12:52:39 2004

# Correlation and Closeup

IdMax for Tower vs Psd (same)

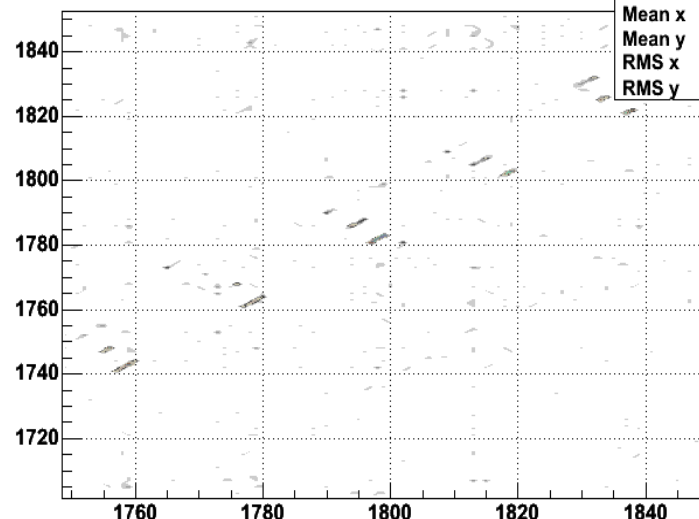


Tue Nov 23 12:08:00 2004

Same2D

Entries	16734
Mean x	1222
Mean y	1507
RMS x	627.9
RMS y	673.5

IdMax for Tower vs Psd

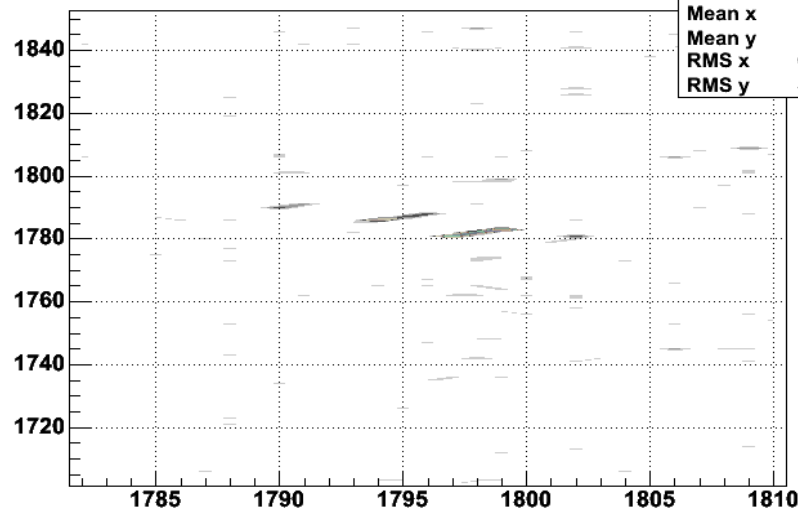


Wed Nov 17 15:27:58 2004

Tower\_psd

Entries	129581
Mean x	1798
Mean y	1783
RMS x	27.61
RMS y	40.88

IdMax for Tower vs Psd



Wed Nov 17 15:36:04 2004

Tower\_psd

Entries	129581
Mean x	1798
Mean y	1783
RMS x	6.337
RMS y	36.98

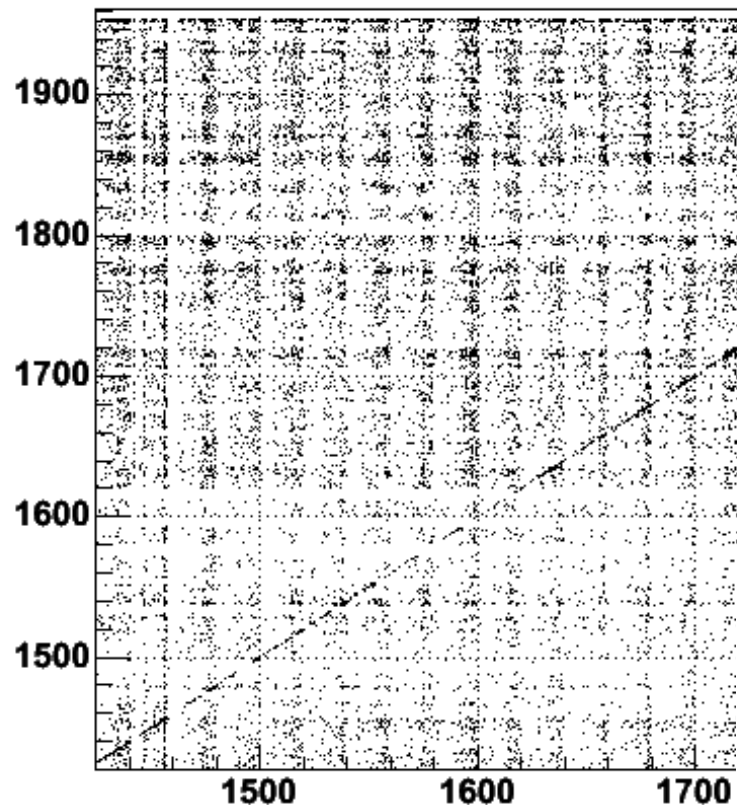
## **Observations so far:**

**In groups of every 20 towers,  
4 Towers are nicely correlated  
4 towers are off by 8  
4 towers are off by 16**

**One module has 20 towers in a row.**

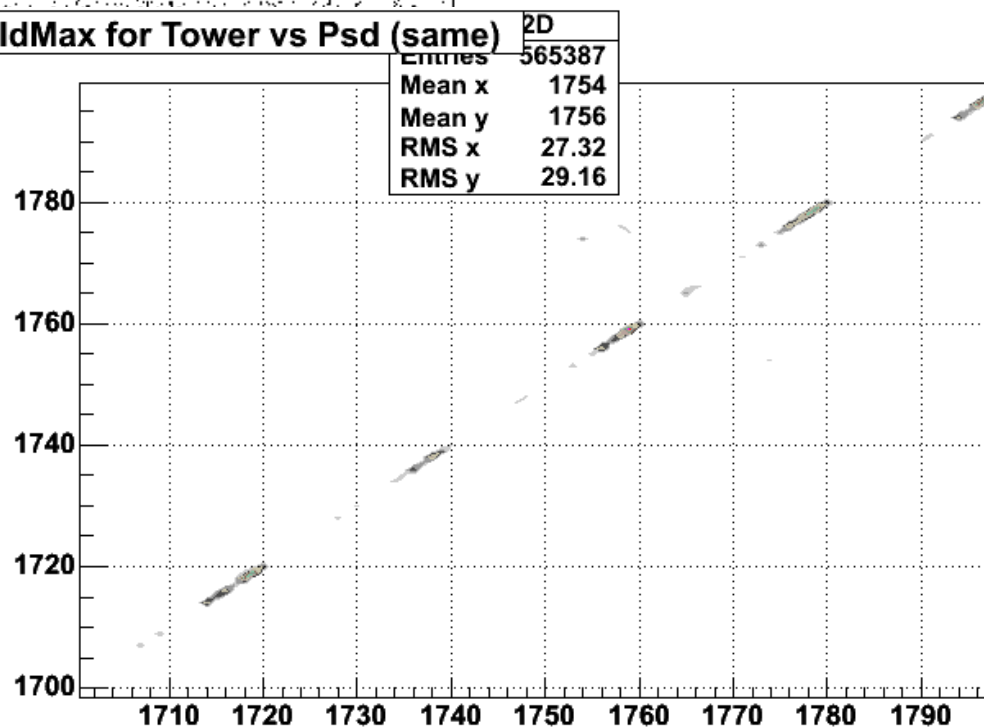
In mapping, an offset of 4 is applied for each 20,  
change the offset and then...

# IdMax for Tower vs Psd (same)



Same2D	
Entries	565387
Mean x	1682
Mean y	1757
RMS x	152
RMS y	152.2

## IdMax for Tower vs Psd (same)



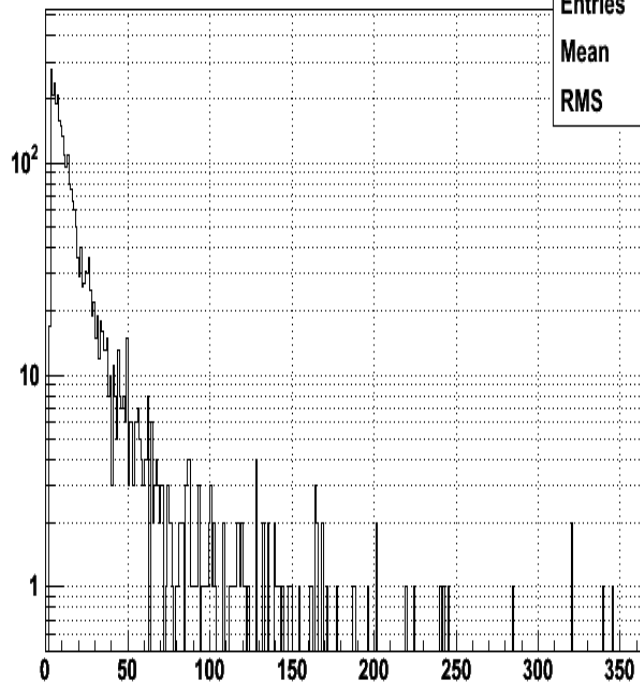
2D	
Entries	565387
Mean x	1754
Mean y	1756
RMS x	27.32
RMS y	29.16

Thu Nov 18 10:34:35 2004

Thu Nov 18 10:43:48 2004

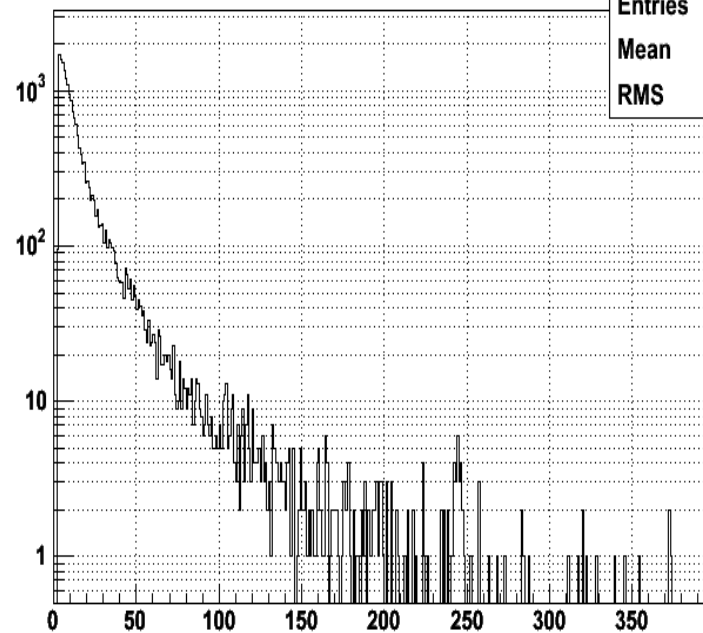
# Electron after correction: Project tracks with $p > 1$ and look at the ADC distribution...

Electron spectra for PSD (tower  $e/p > 0.8, p > 1.5$ )



Wed Dec 1 12:57:44 2004

Electron spectra for PSD (tower  $e/p > 0.8, p > 1.$ )



Wed Dec 1 12:58:52 2004

## How does the Map work here...

PSD Electronics used 4800 channels from (300\*120) SMD channels  
300\*120 SMD channels were taken from about 100 times more SVT channels.

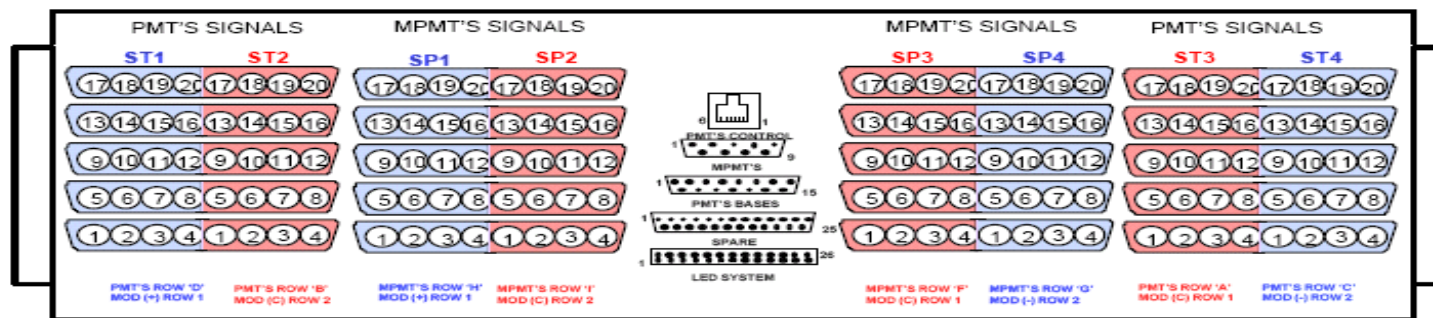
2400 32-bit words give 4800 PRS ADC

Sequential channel numbers are to be mapped to PRS Id

Smallest Unit is PMT-crate housing MAPMTs

Channels are read in units of 4 from each row alternatively,  
which way does it start,  $\eta=0$  or  $\eta=1$ ?

Marcia took  $\eta=0$  as starting point.



PMT'S AND MPMT'S SIGNAL CONNECTORS: POSITRONIC, PIN P/N: MC4101D, SHELL P/N: CBD5W8M000T20

LED SYSTEM: 3M4628

SPARE: D-25

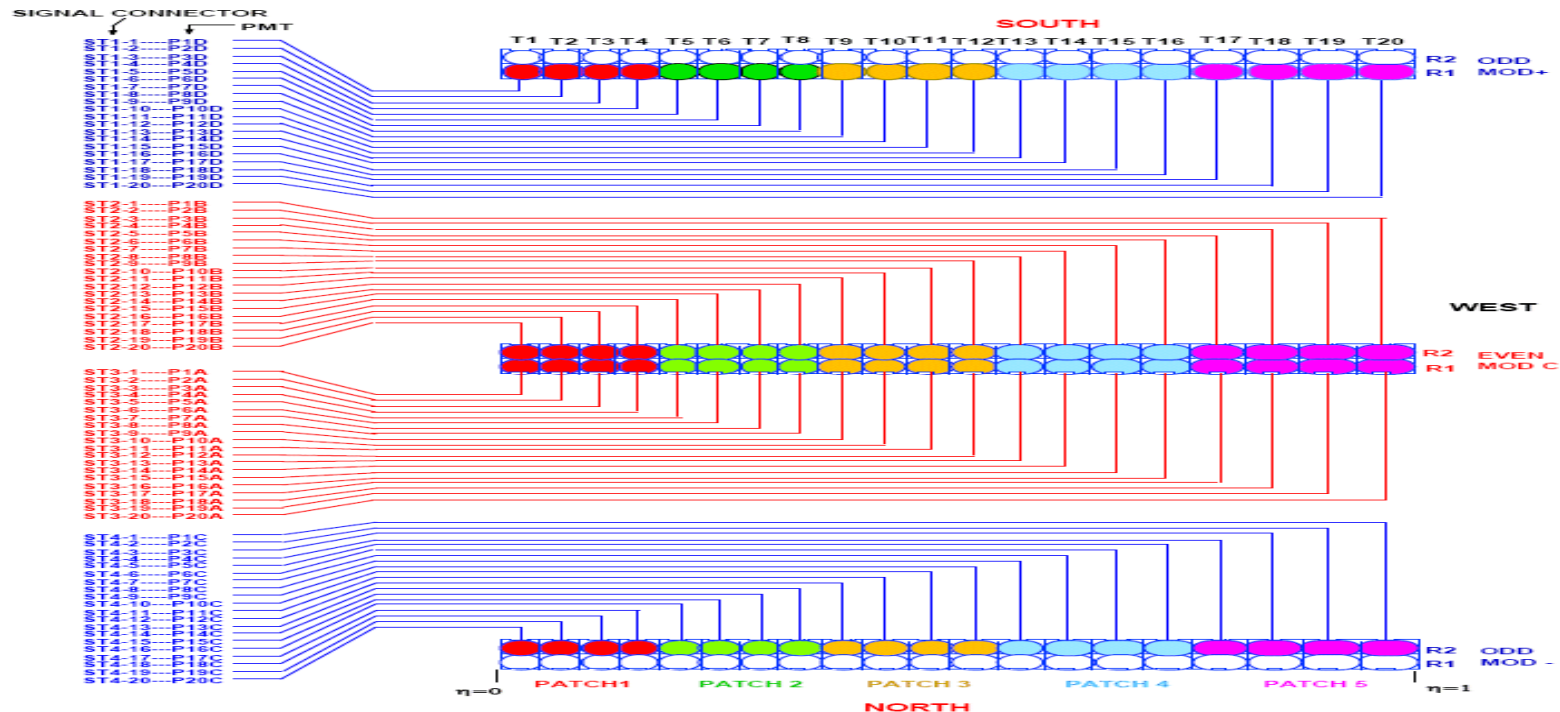
PMT'S BASES: DB-16

MPMT'S: DE-8P

PMT'S CONTROL: AMP655060

POSITION OF TRIGGER PATCHES AND ASSOCIATED PMT, CONNECTOR AND PIN NUMBER. MODULES AS SEEN FROM THE TOP OUTSIDE THE BARREL LOOKING TOWARD THE CENTRAL AXIS. (THE PATTERN OF MODULES SHOWN IS AS THE FIGURE OF PAGE 18)

EMC-WSU, JOSE RISO, 11/12/2000



THE POSITION OF THE PATCHES IS IDENTIFIED BY PMT'S BOX AND PATCH NUMBER.



So, the approach is,

Starting point for each PMT box and add in terms of 4 for Alternate rows.

So there are offsets like,

0,1,2,3

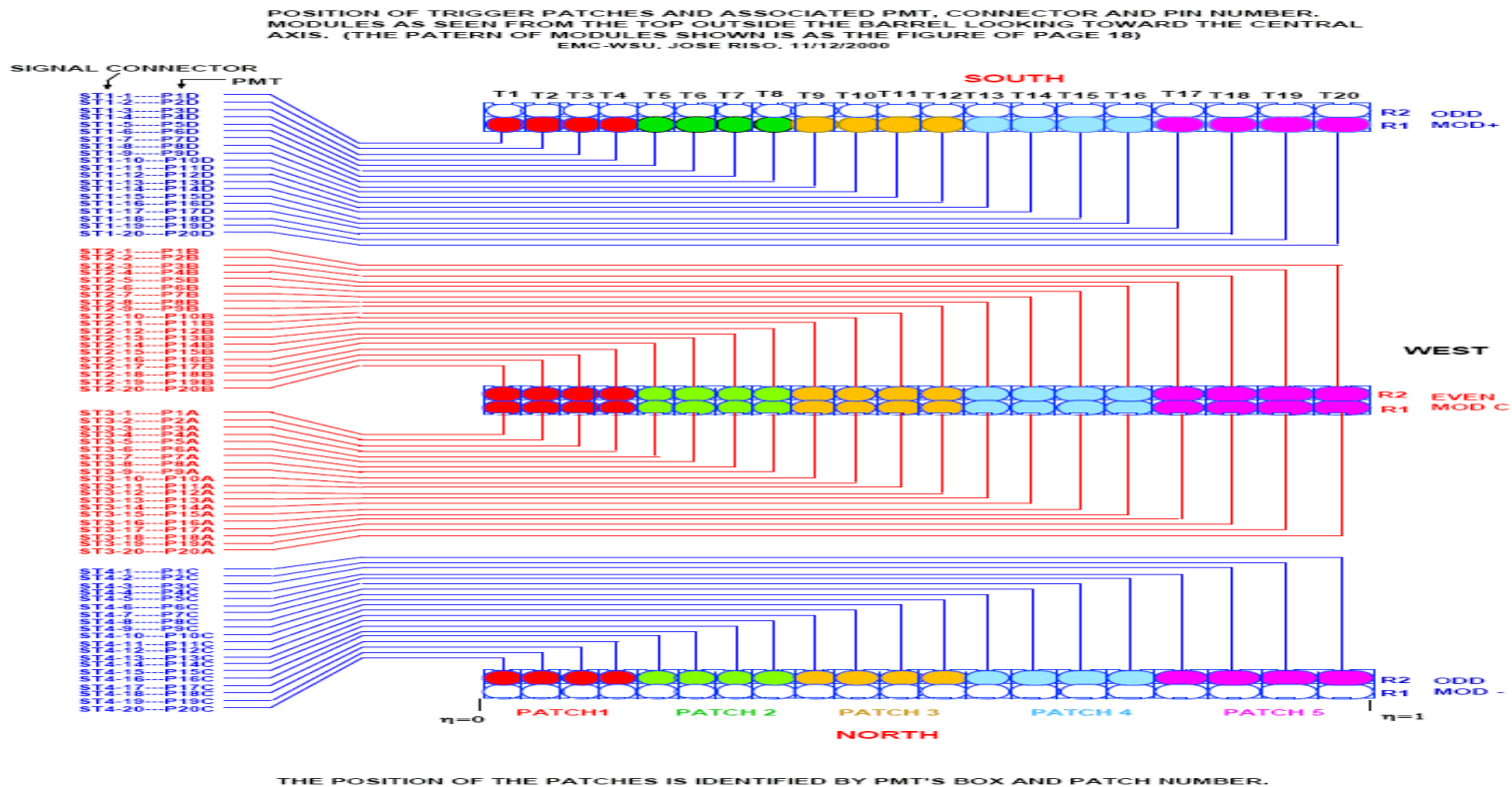
Then

20,21,22,23

Q: Channels are read in units of 4 from each row alternatively, which way does it start,  $\text{eta}=0$  or  $\text{eta}=1$ ?

Marcia took  $\text{eta}=0$  as starting point.

# How it should go in fixed map....



Then Marcia's new observation of tower arrangement.  
And now new offset, and correlation is lost..

So, where we are:

PMT arrangement seems OK.

Needs clarification on how FEE channels are connected to PMT connector...

- PSD seems to have well-correlated behaviour with global detector (straight band.., corruption in PRS?)
- For correlated towers, MIP and electron response seems to fine as expected