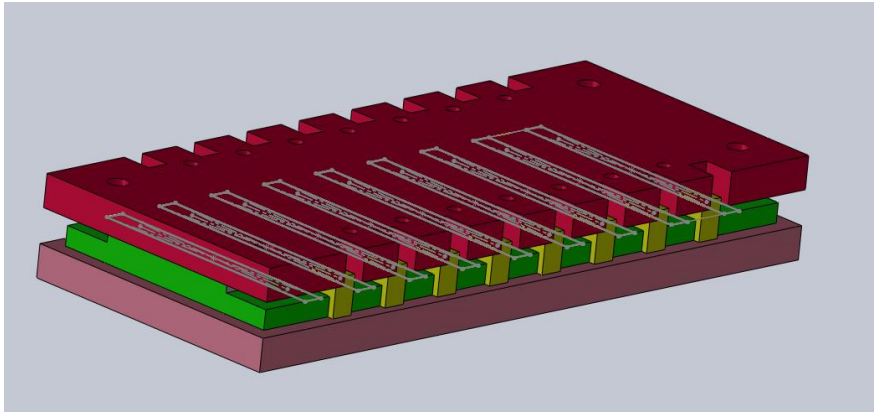
Work Status

- **ZDC ECal**
- MC simulation
  - Change from gamma to pi0 (to do)
  - Add silicon layer (to do)
- Test beam analysis : Linear Energy regression
- 3rd prototype : PbWO4 + SiPM + HGCROC



- **RPC**
- Test beam July17th to July28th
  - FEE production (undergoing)
  - Draw Amp box for E88 (undergoing)
- NCU RPC cosmic ray setup (undergoing) : RPC with small pads doesn't work
- Journal club (June 26th)

- **DY analysis :**
- Better analysis code (done)
- Install env for python coding under labpc (undergoing)
- Test different correlation parameters (to do)
- Meeting w/ Catarina(June 30th, 10AM)

- **MCFM + xFitter**
- Debugging (undergoing…)

3rd ZDC ECal Prototypes

Detector	Crystal				Sensor		DAQ
	name	Size of one cell	Length	Array	Type	sensor/crystal	
1nd LYSO + SiPM	LYSO	1cm*1cm	6.6cm (6X0)	8x8	SiPM Onsemi MICROFC-60035	1	CITIROC
2nd LYSO + APD	LYSO	1cm*1cm	6.6cm (6X0)	8x8	APD C30739ECERH	1	CITIROC
2nd PbWO4 + SiPM	PbWO4	2cm*2cm	5.3cm (6X0)	6x6	SiPM Onsemi MICROFC-60035	2	CITIROC
3nd PbWO4 + SiPM	PbWO4	2cm*2cm	5.3cm (6X0)	6x6	?	?	HGCROC

SiPM Sensors (from 錫泓)

SiPM Compare (HAMAMATSU)

PART#	Pixel Size (um)	Active area (mm^2)	Package size (mm^2)	No. of pixel	Capacitance (pF)	Fill factor (%)	Density (pixels per mm^2)	Density2 (pixels per Crystal)	Array for Crystal
S14160-1310PS	10	1.3 x 1.3	2.63 x 2.1	16663	100	31	2462.03	799824	7x8 (19.91x18.55)
S14160-3010PS	10	3 x 3	4.35 x 3.85	89984	530	31	4771.16	1439744	4x4 (18.15x16.15)
S14160-6010PS	10	6 x 6	7.35 x 6.85	359011	2200	31	6653.28	1436044	2x2 (14.95x13.95)
S14160-1315PS	15	1.3 x 1.3	2.63 x 2.1	7284	100	49	1076.24	349632	7x8 (19.91x18.55)
S14160-3015PS	15	3 x 3	4.35 x 3.85	39984	530	49	2120.04	639744	4x4 (18.15x16.15)
S14160-6015PS	15	6 x 6	7.35 x 6.85	159565	2200	49	2957.10	638260	2x2 (14.95x13.95)
S14160-3050HS	50	3 x 3	3.4 x 3.4	3531	500	74	265.04	88275	5x5 (18x18)
S14160-4050HS	50	4 x 4	4.4 x 4.4	6331	900	74	292.80	101296	4x4 (18.35x18.35)
S14160-6050HS	50	6 x 6	6.4 x 6.4	14331	2000	74	324.07	128979	3x3 (19.7x19.7)

PADDING (space between SiPM) = 0.25 mm
Crystal size = 20 x 20 mm^2
Density = No. of Pixel / (Package width + PADDING) / (Package height + PADDING)
Density2 = No. of Pixel * No. of SiPM in x-axis * No. of SiPM in y-axis
= No. of Pixel * INT(Crystal width / (Package width + PADDING)) * INT(Crystal height / (Package height + PADDING))

500pF limitation
for HGCROC

Estimation for 6*6 Crystals

- **Baseline**
- read 6*6 PbWO4 towers
- 1 HGCROC has 64 channels
- 2 HGCROC per DAQ board = 128 ch
- Full cover one PbWO4 towers need 16 SiPMs
- **Ideal case**
- 6*6 PbWO4 towers * 16 SiPMs = 576 SiPMs (Me)
- 576 SiPMs / 128 ch = 4.5 DAQ boards (錫泓)