FCAL monitor/calibration
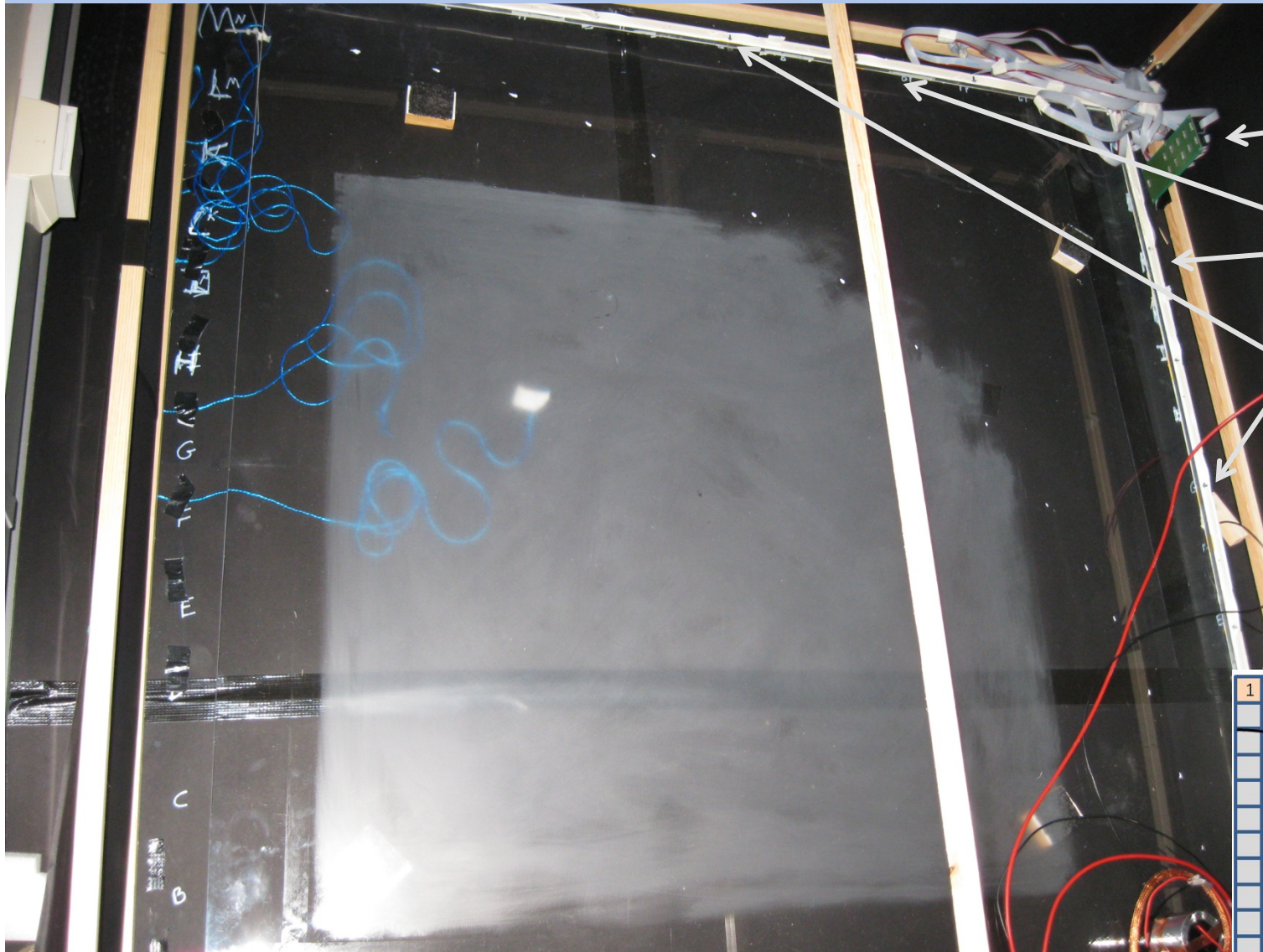## 29 January 2013 update

E.G.Anassontzis (Stratos),

P.Ioannou, E.Kappos, C.Kourkoumelis, G.Voulgaris
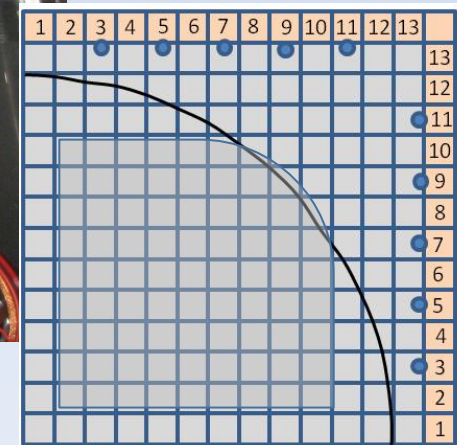
GlueXcitations Xperiment

Fcal controller and power distribution boards

LEDs holders
(5 groups of 4 LEDs in each holder)

LED position
(shown with blue arrow)

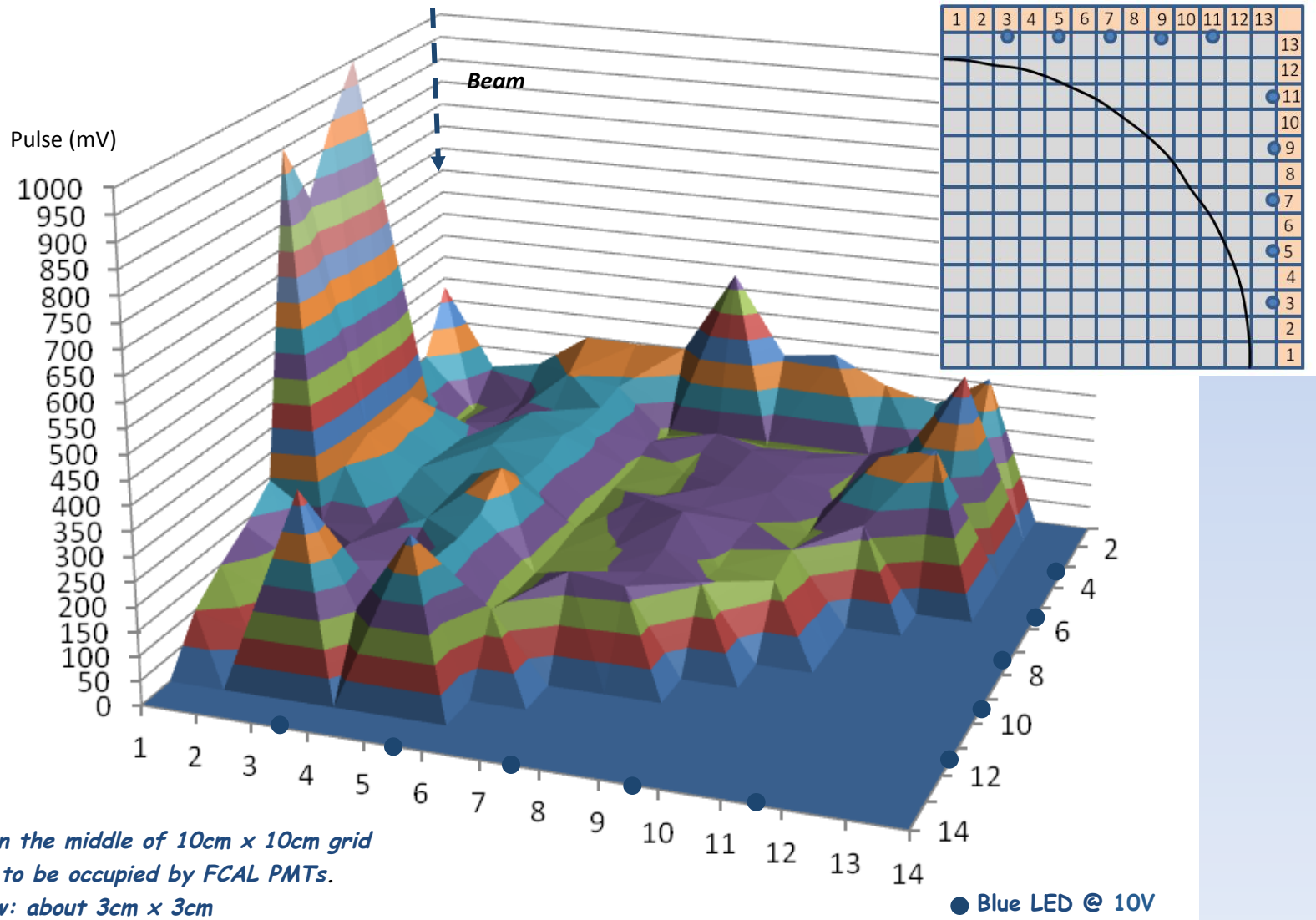Dots represents the limit of the area occupied with FCAL PMTs

1	2	3	4	5	6	7	8	9	10	11	12	13

13
12
11
10
9
8
7
6
5
4
3
2
1

Intensity vs V_{LED}

Array PMT@1670V
Intensity in mV

Intensity along column 5
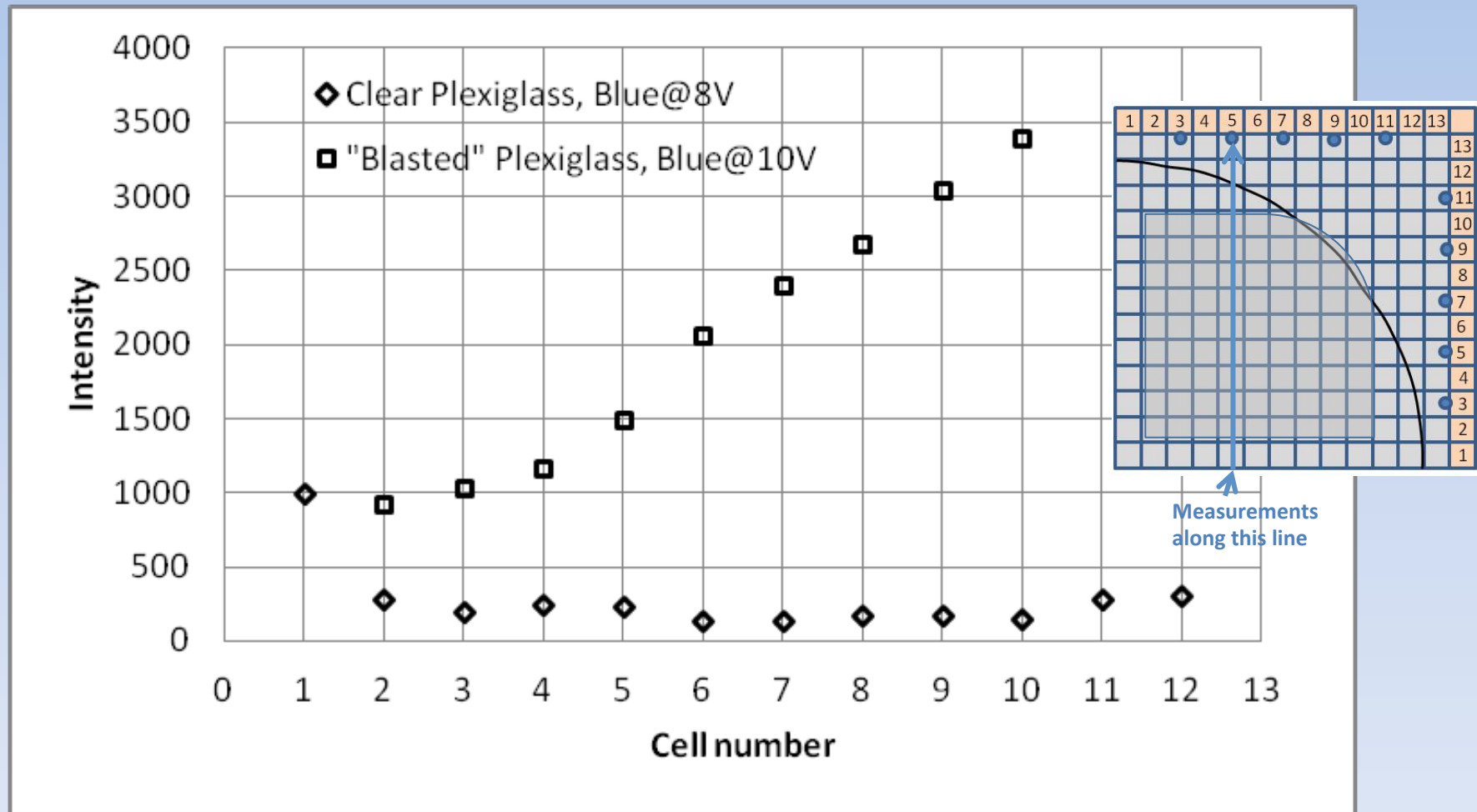
Short PMT@1340V
Blue LED
Intensity in mV

Intensity distribution on a 13x13 cells
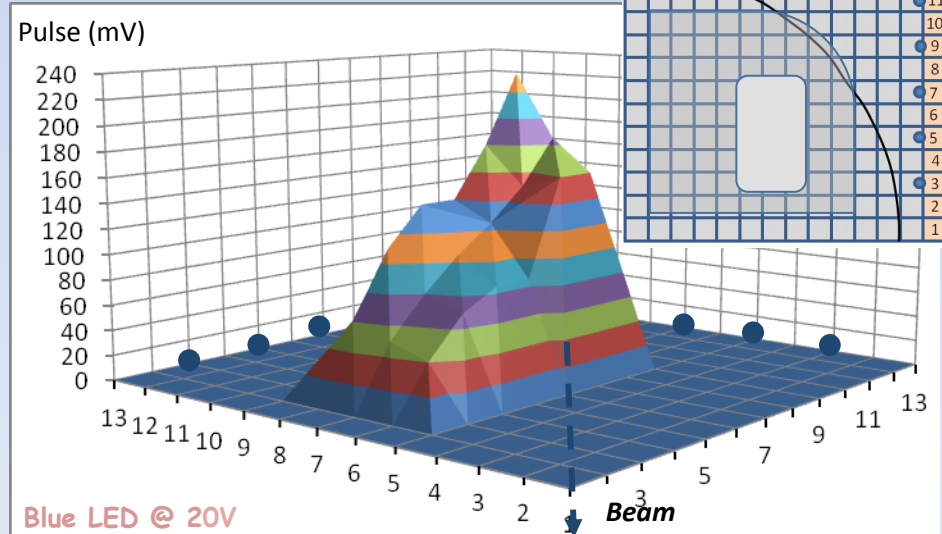## Clear Plexiglas

Pulse (mV)

Beam
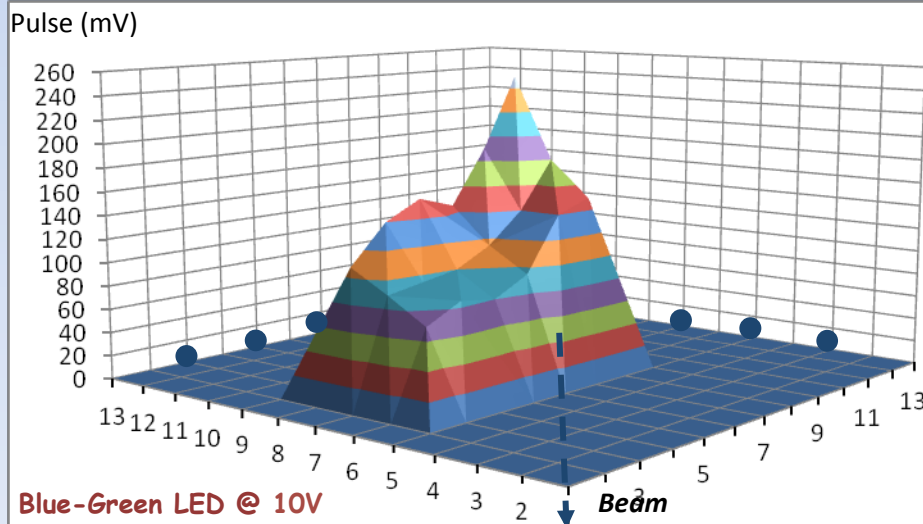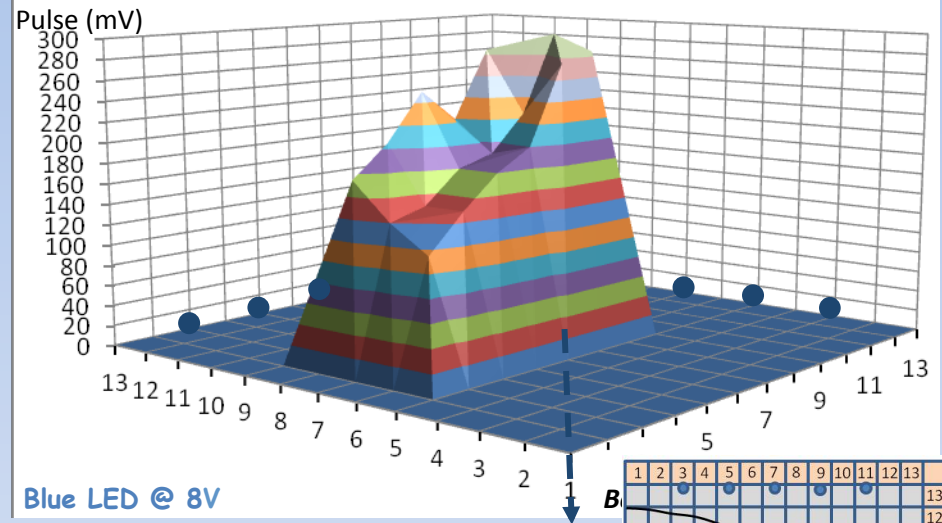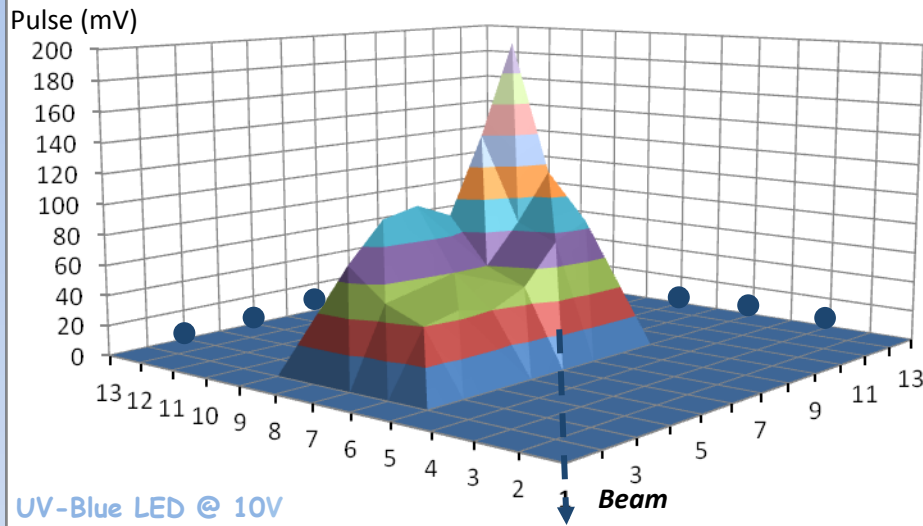
Measurements taken in the middle of 10cm x 10cm grid
at positions expected to be occupied by FCAL PMTs.
Measuring PMT window: about 3cm x 3cm

● Blue LED @ 10V

Short PMT@1340V

Number 1 to 14 indicates beginning of row or column

Intensity distribution on a 13x13 cells "Blasted" Plexiglas

UV-Blue LED @ 10V

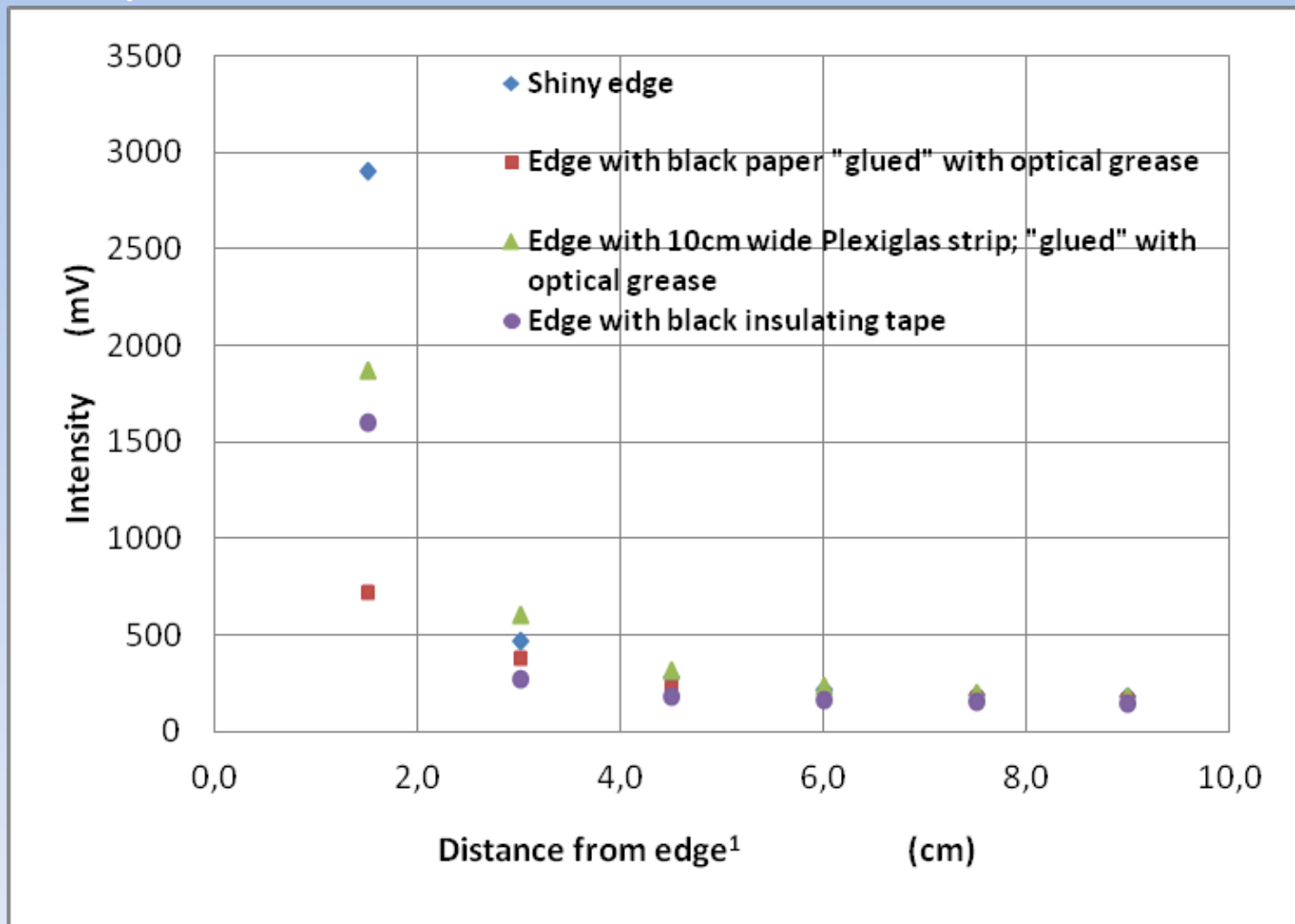Blue LED @ 8V

Blue-Green LED @ 10V

Blue LED @ 20V

Measurements taken in the middle of 10cm x 10cm grid at position expected to be occupied by FCAL PMTs.

Array PMT@1670V

Number 1 to 13 indicates row or column number

Reflectance test

Short PMT@1340V (30mm x 30mm window)
[1]Distance of the PMT window central line from the Plexiglas edge
Blue LED, Intensity in mV

Remarks

➢ As expected, after test measurements, light escape from the Plexiglas board side increase if Plexiglas is "blasted"

➢As expected, "available" light decrease fast inside the "blasted" Plexiglas board; a lot escapes on the side

➢The apparent light intensity between the "blasted"/unblasted is between 50 to 4, depending and decreasing with the distance from the LED

➢ Uniformity of the light detected is better on the unblasted plexiglas

thus

➢ The Plexiglas board surface should be "blasted" to increase the light collected from its side

➢ A uniform "blast" is not recommended unless it is very lightly applied

➢ Alternately,
   ✓Small plastic lenses (ϕ 2 or 3 mm) could be glued in front of each array PMT
   ✓a series of marks could be applied on the board such as crossing lines or dots, easily applied with a CNC machine:
      •Marginally dense in order to have marks in front of each PMT
      •Variable dense depending from the distance from the LEDs

On reflectance
To decrease high signal near the Plexiglas Edges, we could "glue" on the Plexiglas board edges black paper with glue or optical grease