Current status of EM Tile CAL

JLC CAL Meeting @ Tokyo-Univ

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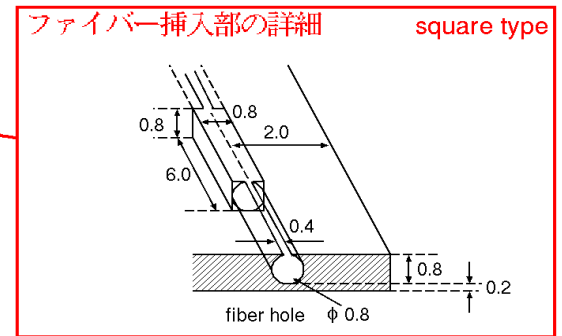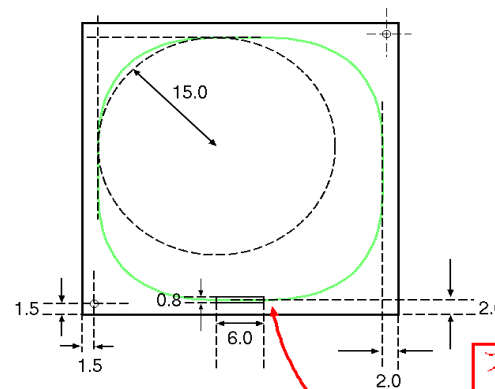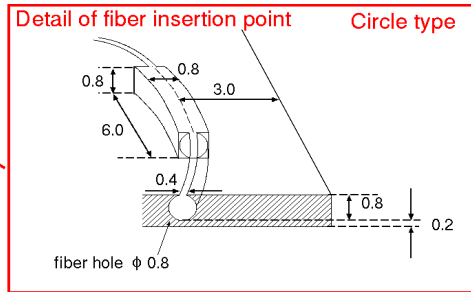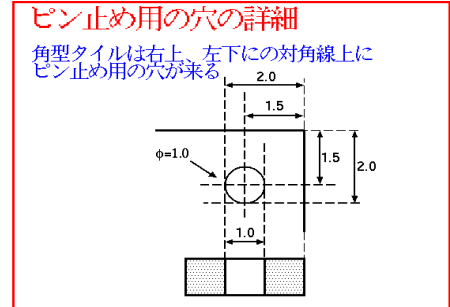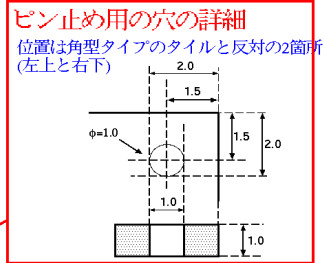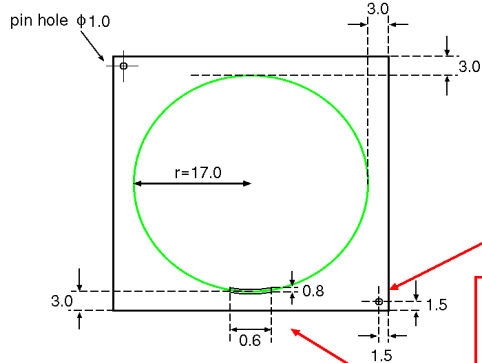   - V-I curve, Laser pulse
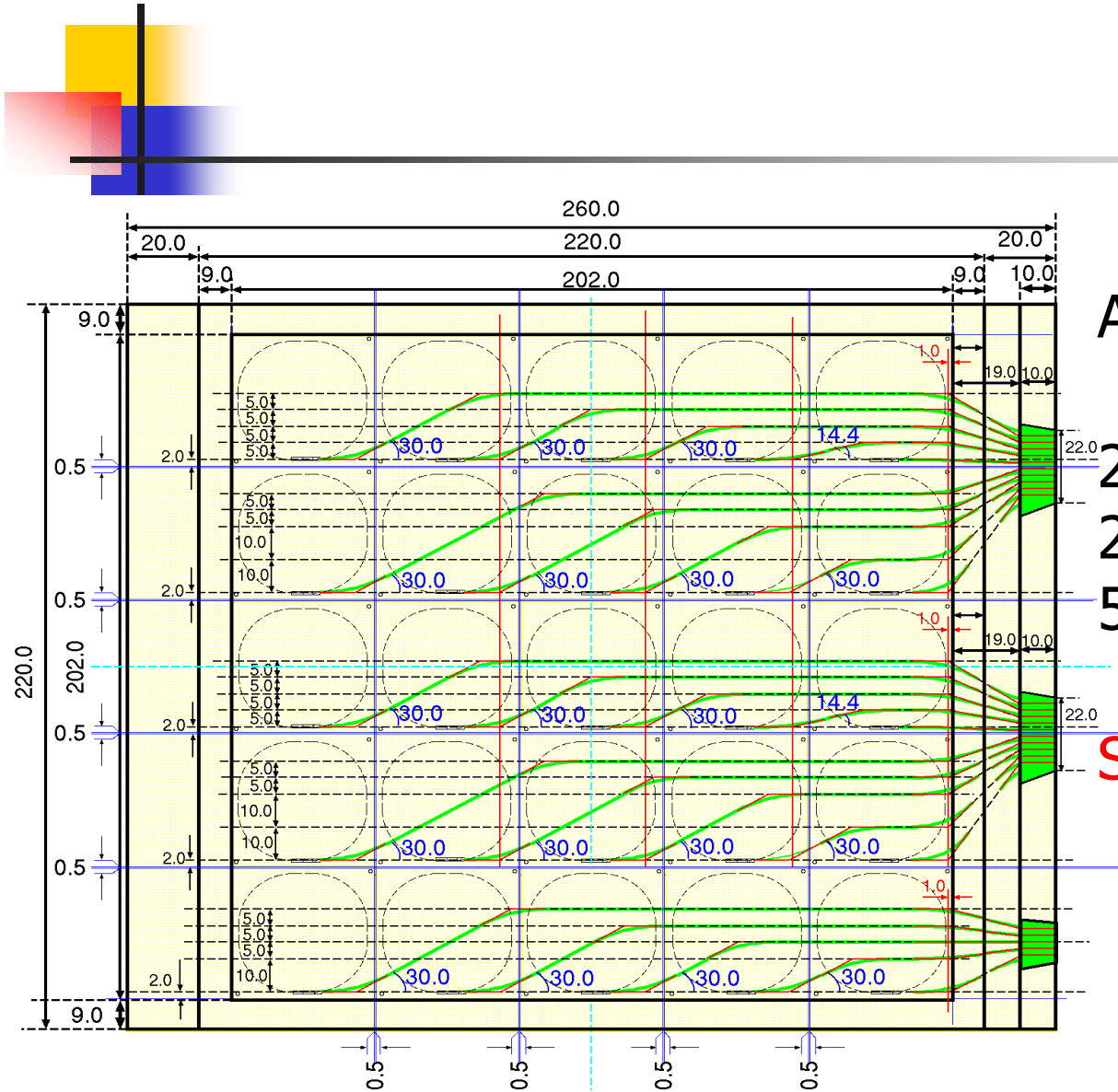- Schedule

Beam test preparation

- Design of Niigata Module
  - Two type of tiles (square x125,circle x125)
  - Acryl plate to fix tiles (circle x5+ square x5)
- Order Materials
  - Fiber assembly (Connector+Fiber+Holder)

    Already finished

  - Tiles and Acryl

    Now order samples, then all we need
  - Not finish to order pet film, metal screw

Design of Niigata Module

pin hole φ1.0

3.0

3.0

r=17.0

3.0

0.8

1.5

0.6

1.5

ピン止め用の穴の詳細

位置は角型タイプのタイルと反対の2箇所
(左上と右下)

φ=1.0

2.0

1.5

1.5

2.0

1.0

1.0

Detail of fiber insertion point   Circle type

0.8

0.8

3.0

6.0

0.4

0.8

0.2

fiber hole φ 0.8

円形タイプの詳細図
(単位 [mm])

角型タイプと逆の対角線上に
ピン穴をつける

ピン止め用の穴の詳細

角型タイルは右上、左下にの対角線上に
ピン止め用の穴が来る

2.0

1.5

φ=1.0

1.5

2.0

1.0

15.0

1.5

0.8

6.0

2.0

1.5

2.0

角型タイプの詳細図
(単位 [mm])

角型タイプは右上と左下の対角線上に
ピン穴を付ける(円形タイプとは逆の対角線上に)

ファイバー挿入部の詳細   square type

0.8

0.8

2.0

6.0

0.4

0.8

0.2

fiber hole   φ 0.8

Acryl plate for square tile

260mm x 210mm
25 tiles attached
5 plane we need

Same form for circle tile

Order Materials

- Fiber assembly (Connector+Fiber+Holder)
    - Order finished (we can't get enough holder?)
- Two types of Tile
    - Scintillator is not enough (Order samples)
- Two types of Acryl plate
    - Order sample molding to Kyoei engineering
- Pet film
- Metal screw (fixed tiles)

Bench test status

- One photo electron check
  - One photo electron peak : PH = 19.7
  - We cannot see two P.E. peak or shoulder
- Mapping test
  - Cannot see dependence and large non uniformity Why?? Trigger problems?
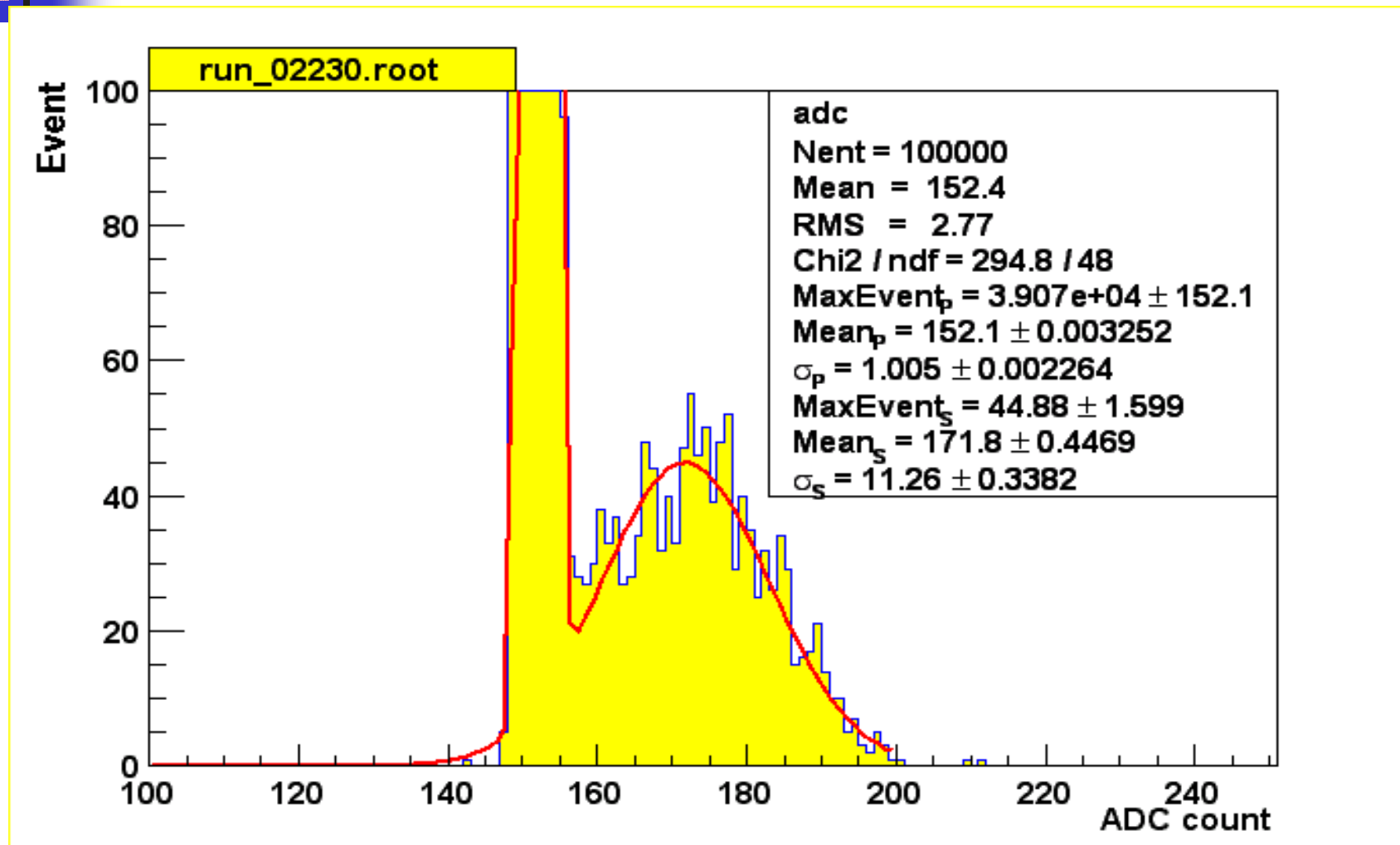 - Difference from the previous data taking : use(befor) or not use(now) own trigger
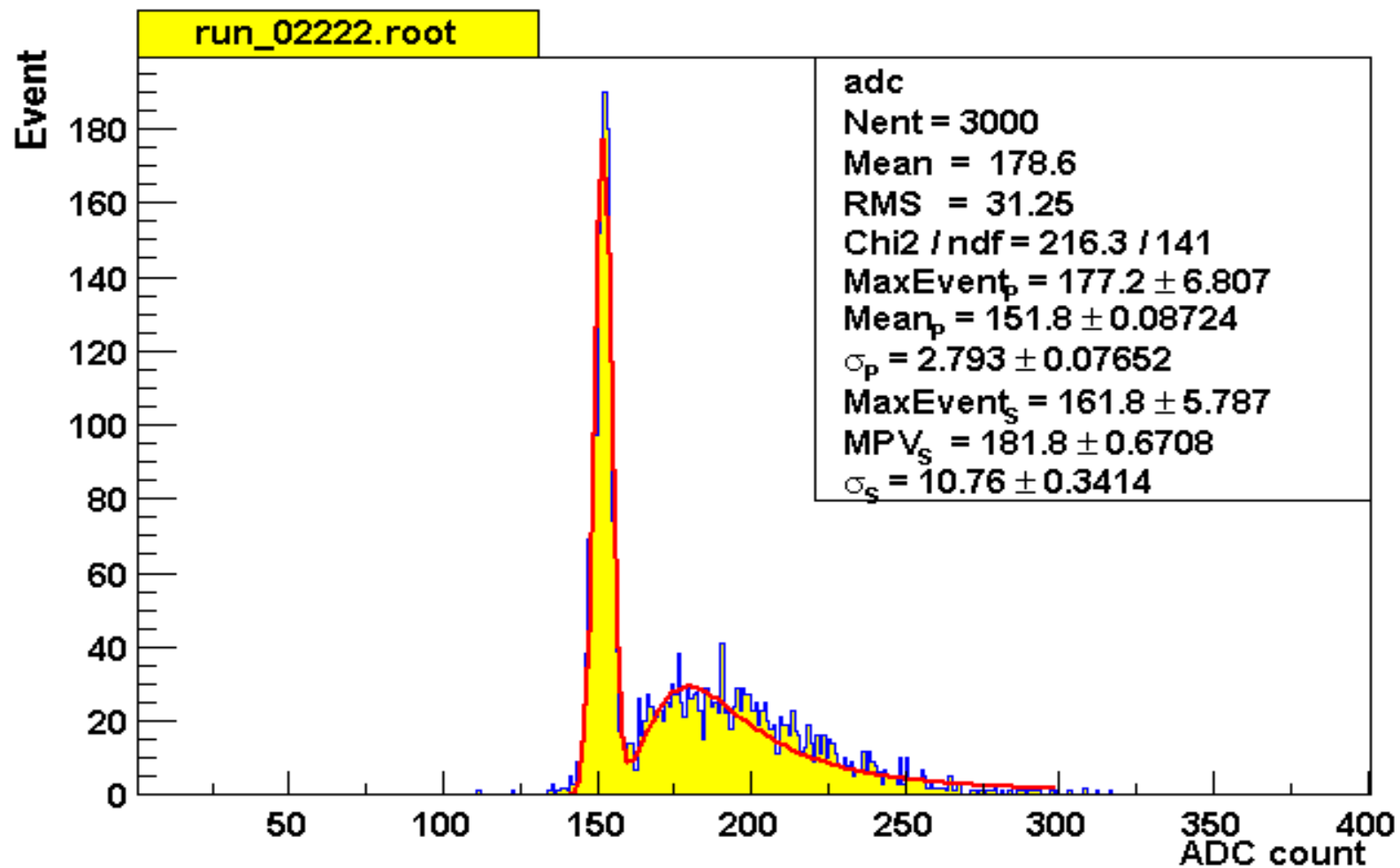
One photo electron check

- Use ND filter (Transparency=10%+32%)
- Measure one P.E. peak
  - PH_1.P.E. = 19.7
- Mean value of usual Pulse height
  - PH_mean = 44.4
- # of P.E._mean = 44.4/19.7=2.2
  - Small value we expected!
- We cannot see two P.E. peak or shoulder

One P.E. peak figure

Usual ADC distribution

run_02222.root

adc
Nent = 3000
Mean = 178.6
RMS = 31.25
Chi2 / ndf = 216.3 / 141
$MaxEvent_P$ = 177.2 ± 6.807
$Mean_P$ = 151.8 ± 0.08724
σ_P = 2.793 ± 0.07652
$MaxEvent_S$ = 161.8 ± 5.787
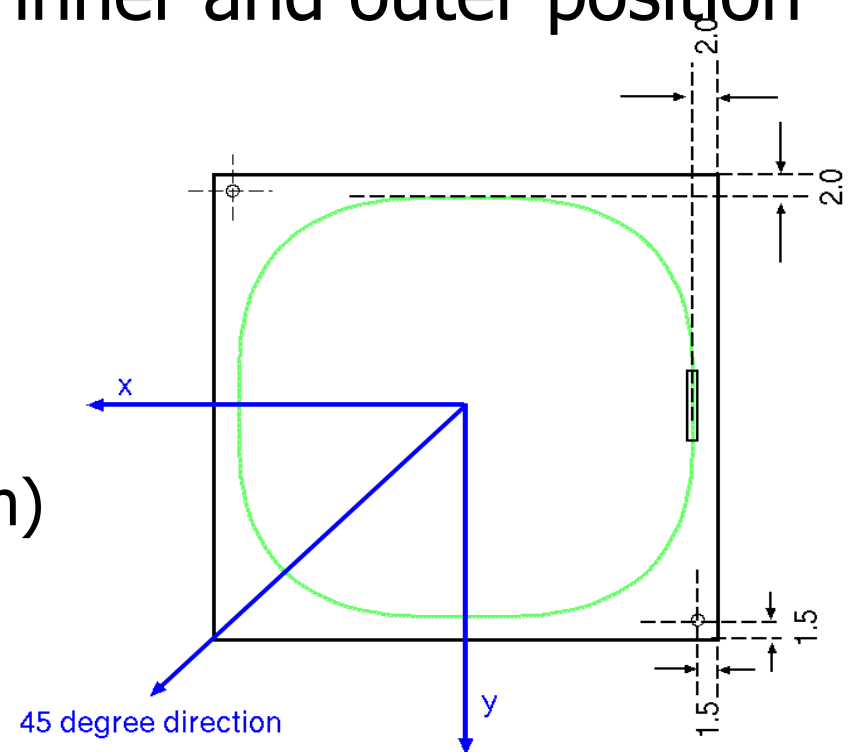MPV_S = 181.8 ± 0.6708
σ_S = 10.76 ± 0.3414

Mapping test

- Data taking : 2mm step
- Direction : x-axis, y-axis, 45°direction
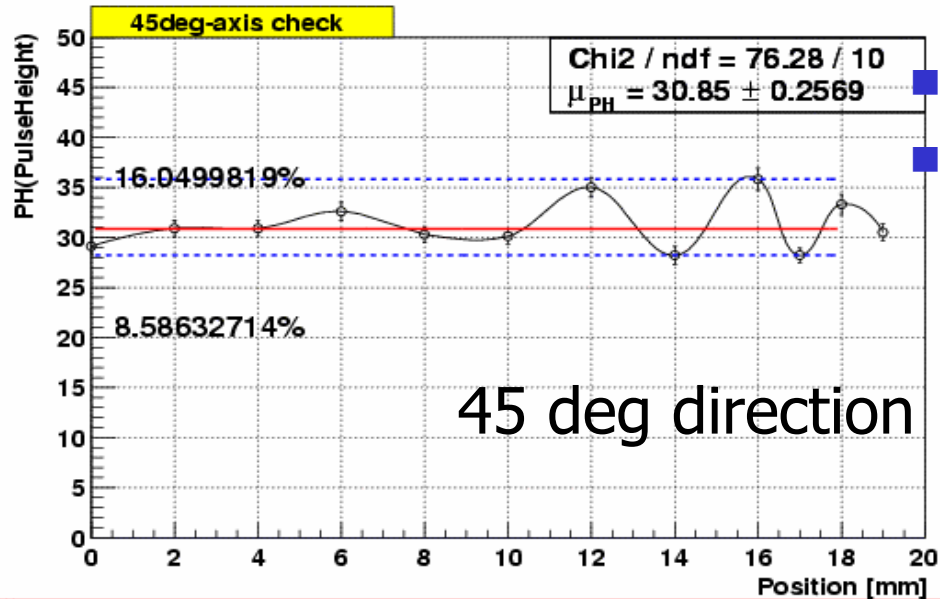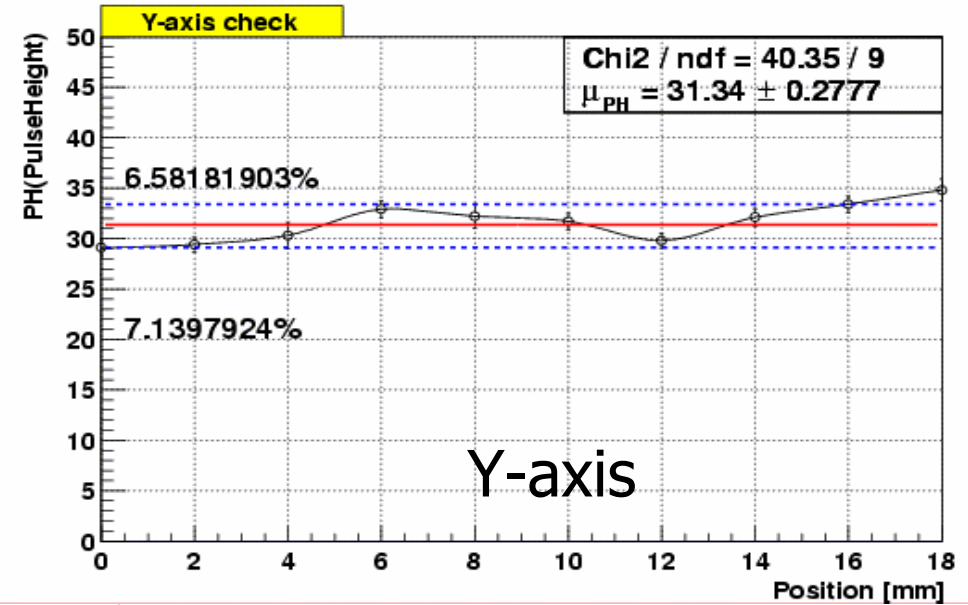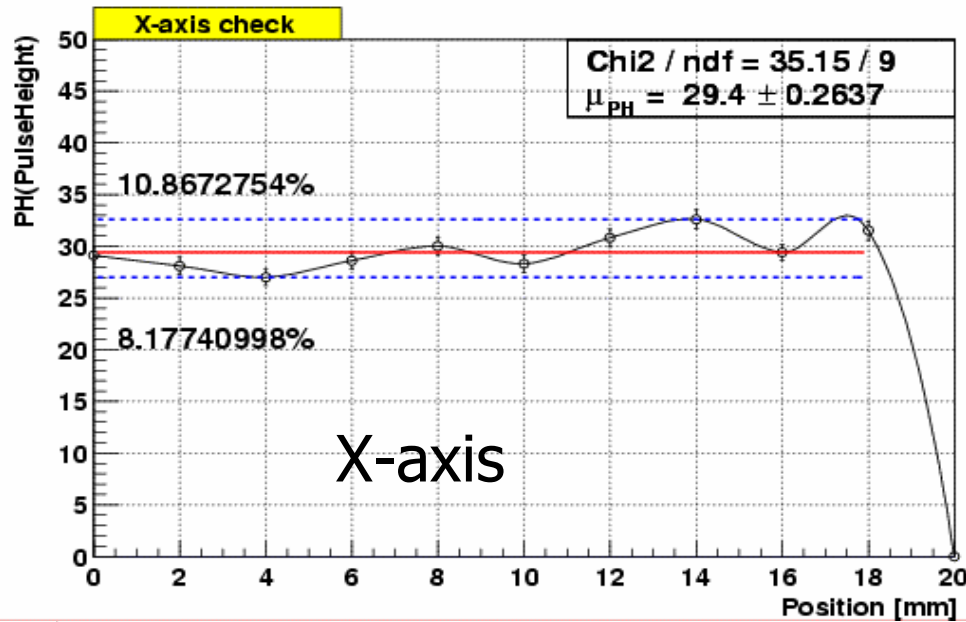- Check difference between fiber inner and outer position and corner

Expected following dependence

Minimum at x,y=18.0mm (fiber position)
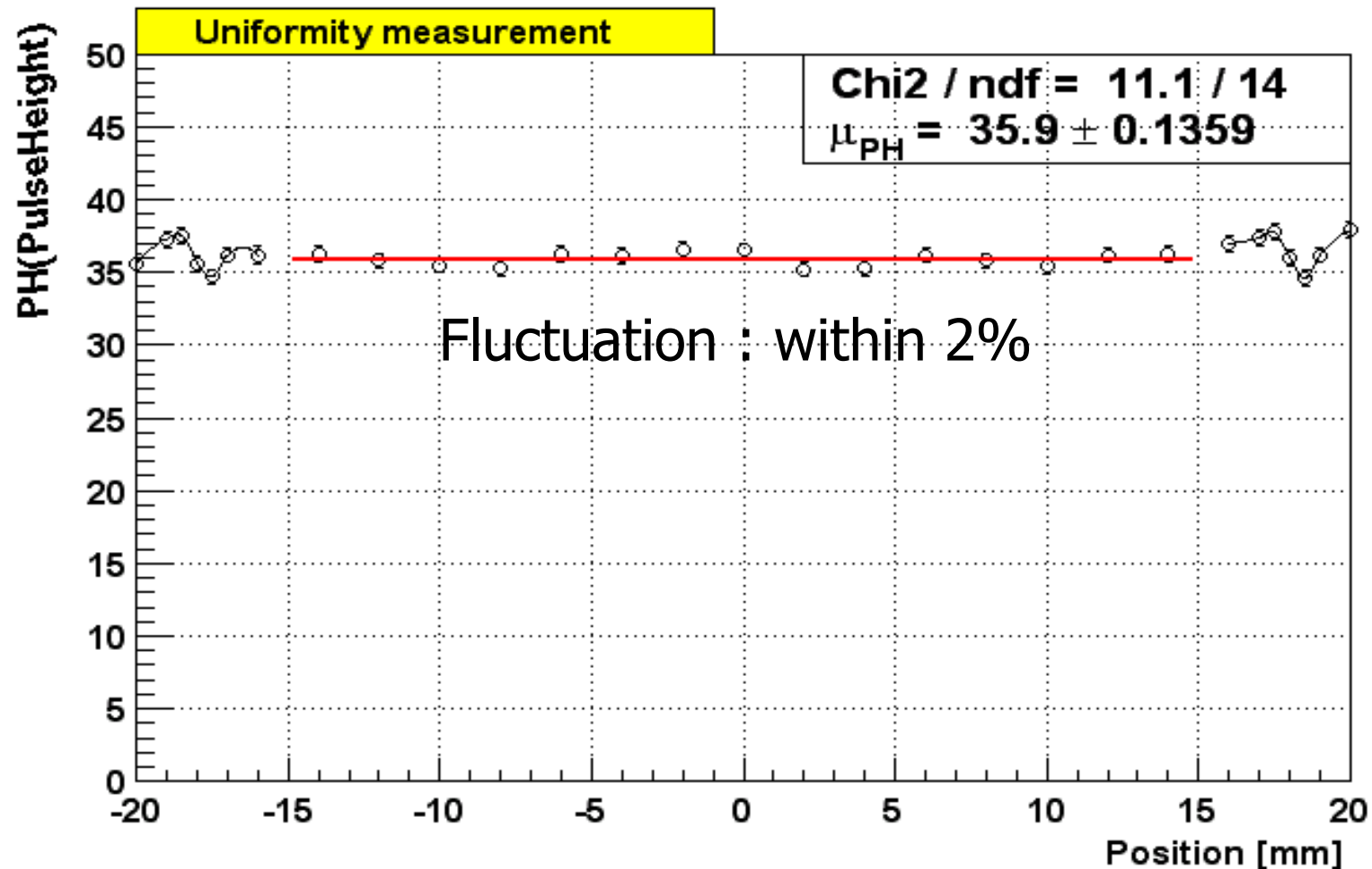Maximum near the fiber position

45 degree direction

Results

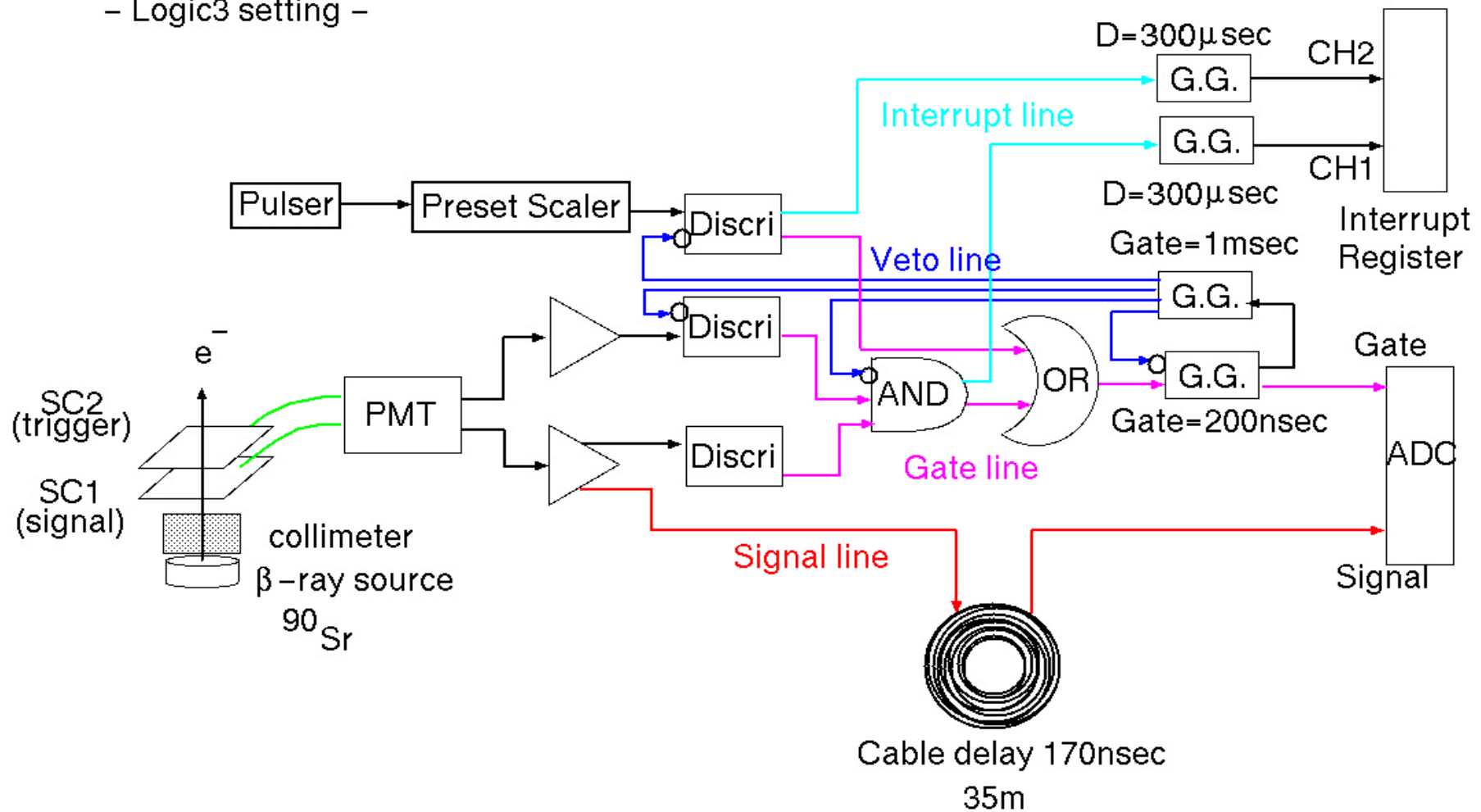

■ Cannot see position dependence

■ Large none uniformity
(compare to previous data)
2%   7%   17%

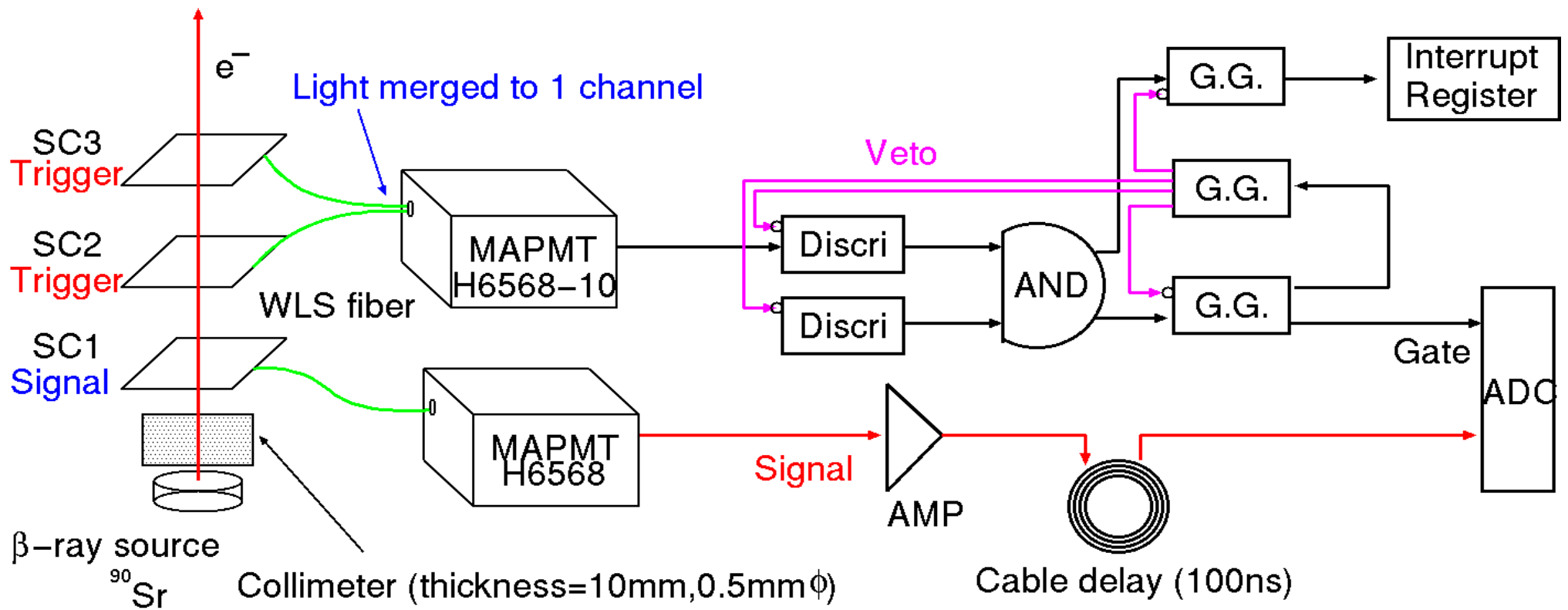   only change trigger system

Previous uniformity checking

Uniformity measurement

Chi2 / ndf = 11.1 / 14
μ_{PH} = 35.9 ± 0.1359

Fluctuation : within 2%

Previous logic setting

– Logic3 setting –

Current setting

Solar panel bench test

Dark current V-I curve

Laser signal observed!

Current(μA)
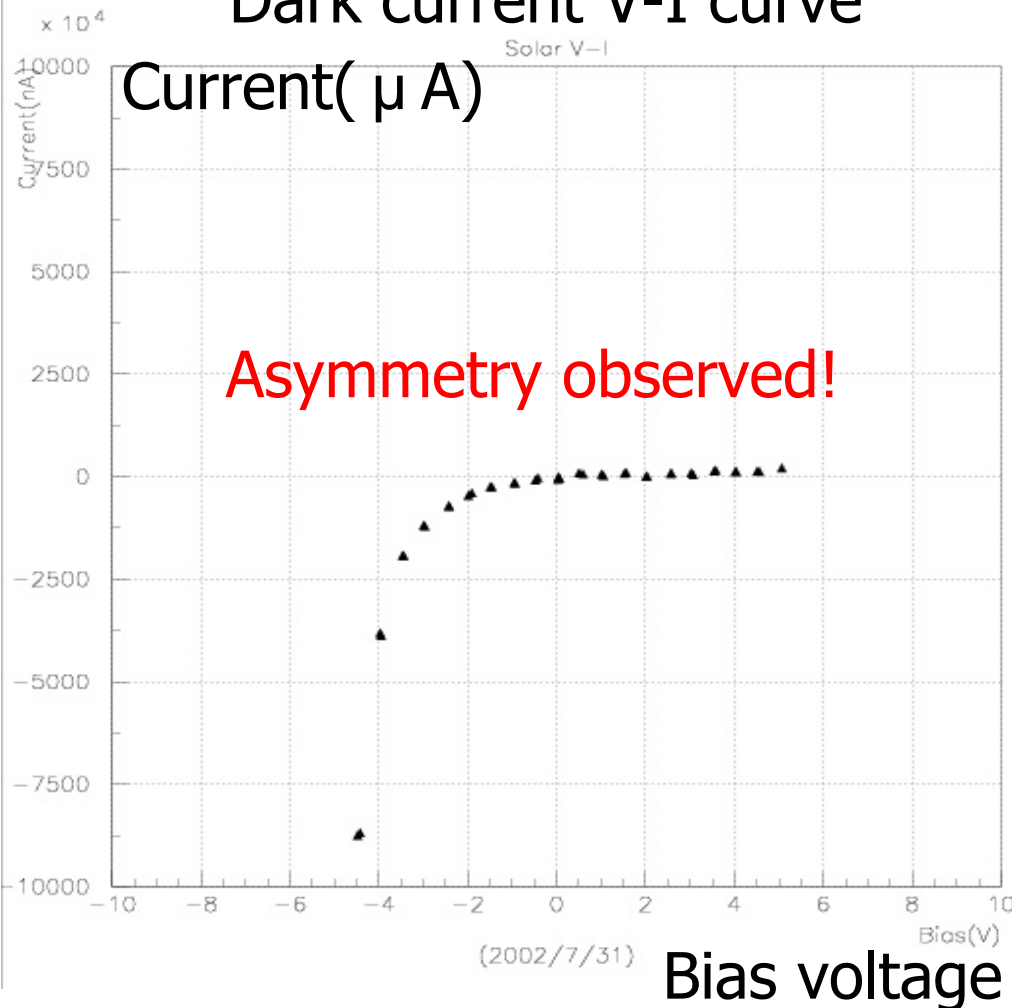
Asymmetry observed!
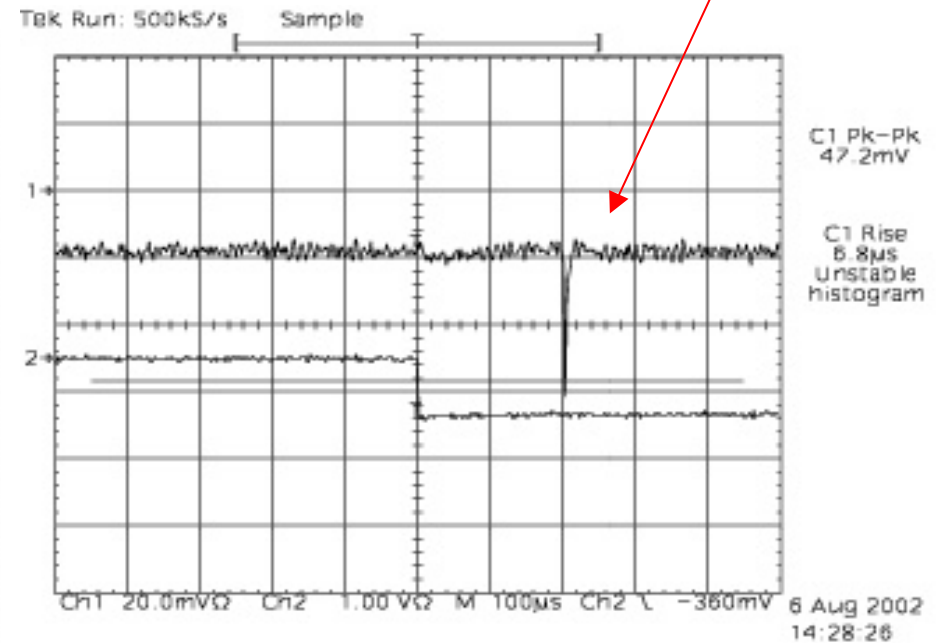
Laser pulse signal
Wave length : 532nm
Bias voltage : 5.0V

Bias voltage

Schedule

- Beam test setting
  - PMT Holder　　already ordered
  - Order tiles and acryl (after getting scintillator)
    early September we want to get
  - Finish to order all materials we need
- Bench test
  - Find the causes of mapping result, then redo mapping test (retake using old setting)
  - Continue to find two P.E. peak