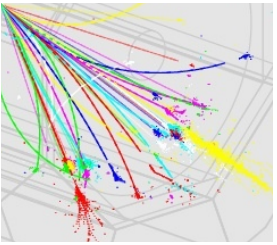
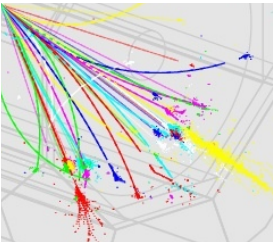


CALICE Meeting

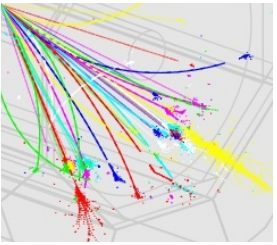
RAL 07.03.2007

M. Stanitzki



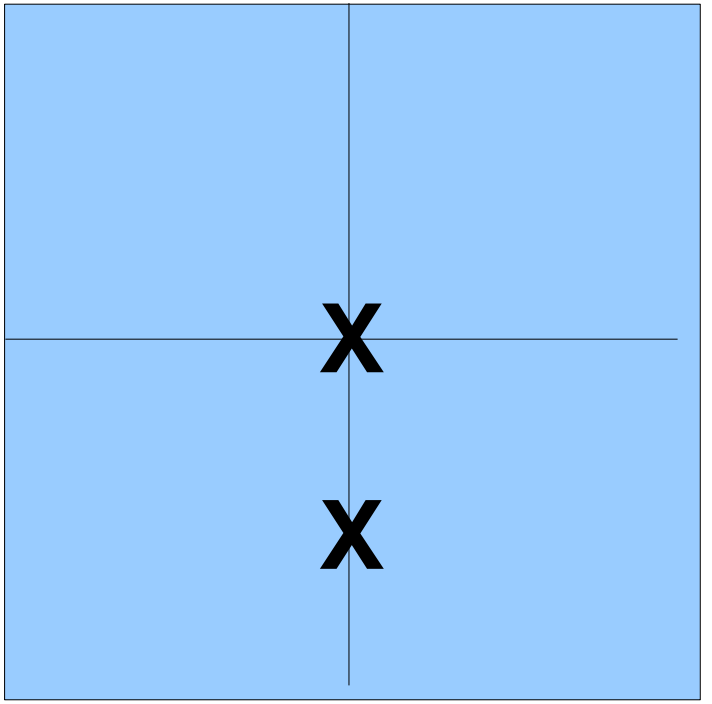
Overview

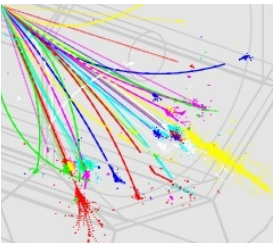
- Work on the Laser is really taking off
- Hit Patterns (Discussion between me and Paul)



The Question

- Crosstalk between pixels
- If the corner of the pixel is hit, up to 4 pixels can give signal
- If hit on the edges, two pixels may fire

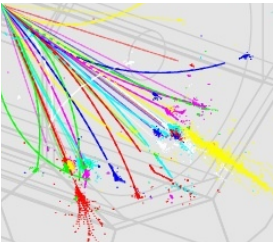




Pattern Classification

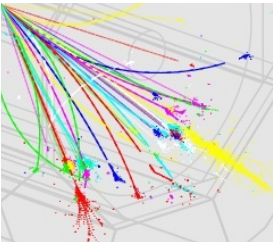
- Classify patterns using distance **d** and pixel size **a**
- $d = \sqrt{n} \cdot a$
- Label patterns using **n**

8	5	4	5	8
5	2	1	2	5
4	1	X	1	4
5	2	1	2	5
8	5	4	5	8

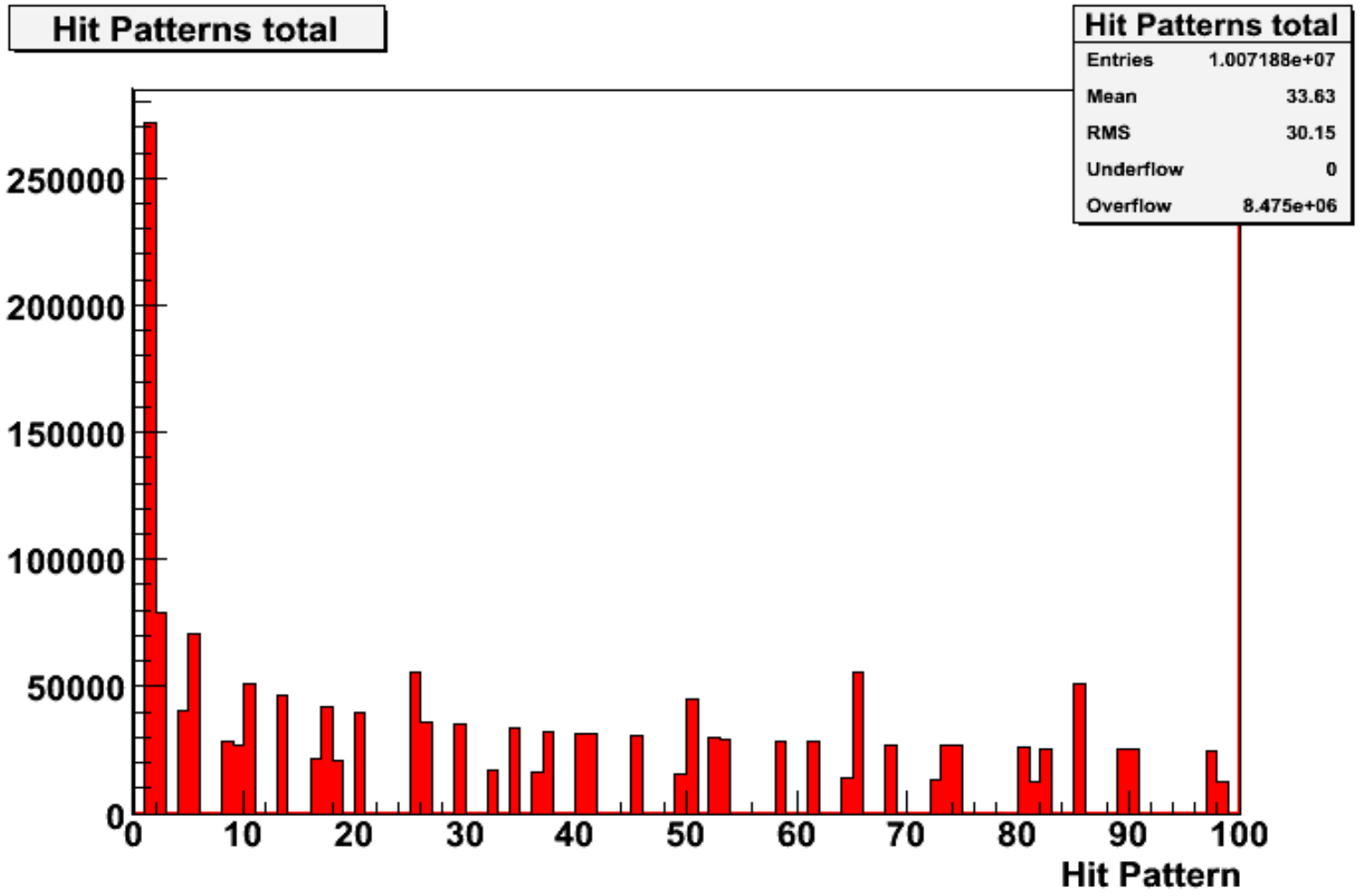


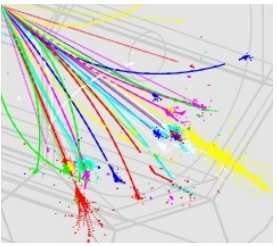
Setup

- Using 20 GeV Electrons
- 25/50/75 µ Pixel Size
- No Charge Sharing applied
- For 50 µ
  - 2000 Hits
  - 2.000.000 unique hit pairs
  - Only use pairs in the same layer
  - Still huge number



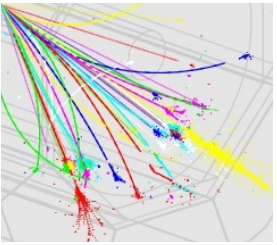
Results (50 µ)


Hit Patterns total
Hit Patterns total
Entries 1.007188e+07
Mean 33.63
RMS 30.15
Underflow 0
Overflow 8.475e+06
250000
200000
150000
100000
50000
0
0
10
20
30
40
50
60
70
80
90
100
Hit Pattern



More ..

- 270000 Patterns type 1 (540 per event)
- 80000 Patterns type 2 (160 per event)
- Compare with 2.000.000 unique patterns per event
- For pattern type 1 slight asymmetry
  - Adjacent in x (286 ± 24)
  - Adjacent in z (259 ± 23)
- This does not include higher order patterns
  - e.g. Three hits in a row



Dependence on Pixel size

- Can run this code for different pixel sizes
- Use again 20 GeV electrons
- Can be alternative way to calculate multiple hits