

Laser Tests at Oxford

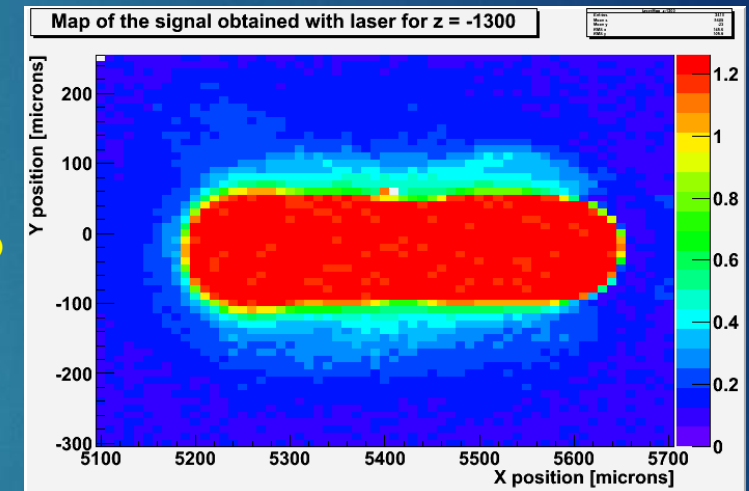
LUIGI VIGANI

Errata Corrige

2

- ▶ Laser tests of last time were afflicted by the high laser power
 - ▶ Big charge release within the pixels
 - ▶ Amplifiers on saturation

Anomalously big pixels, no presence of metal strips...



- ▶ Managed to set laser power (thanks to G. Kramberger and M. Zavrtanik)
 - ▶ Plots look better now...

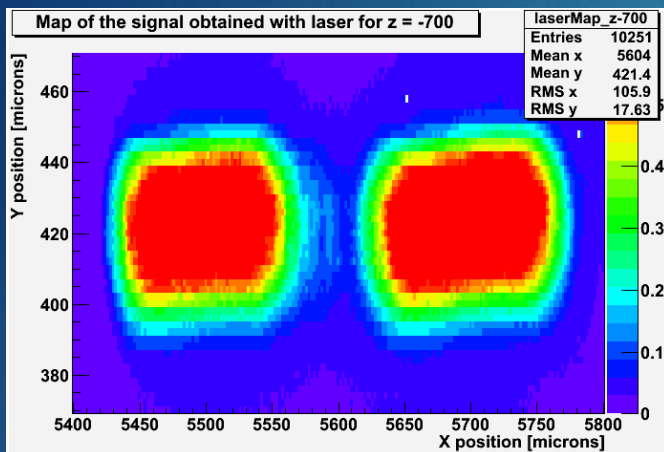
New Signal Maps

3

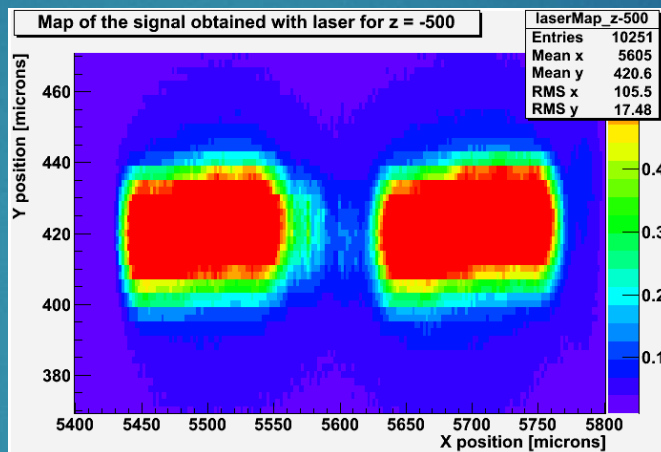
► MB01 (HVStripV1) at -40V

Note: step of 10 μm

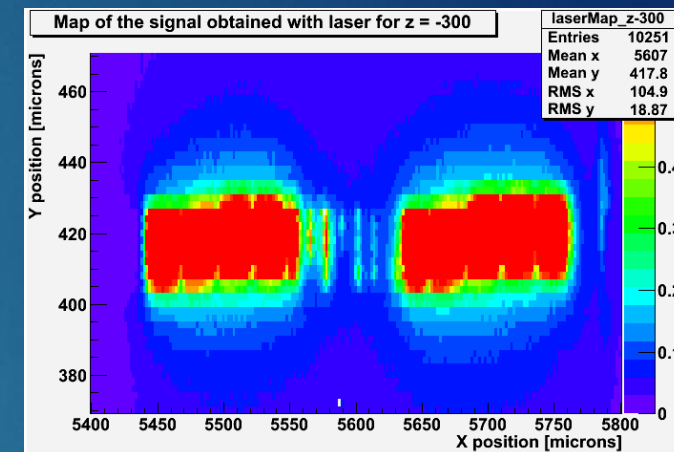
Laser position = -700 μm



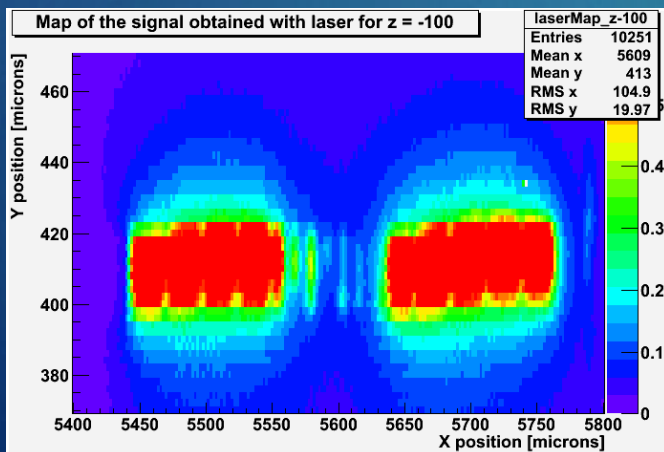
Laser position = -500 μm



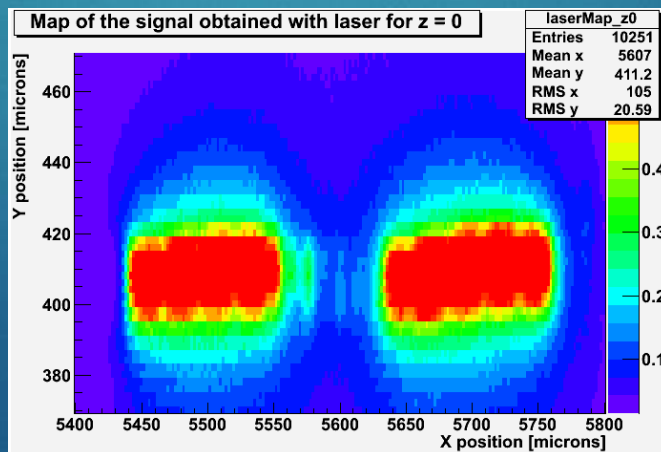
Laser position = -300 μm



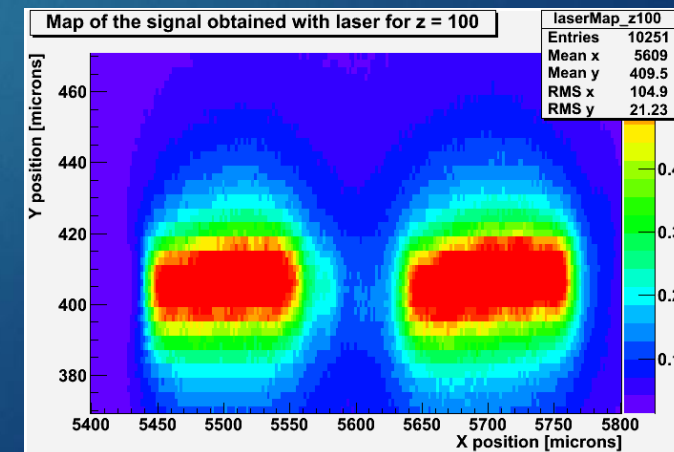
Laser position = -100 μm



Laser position = 0 μm



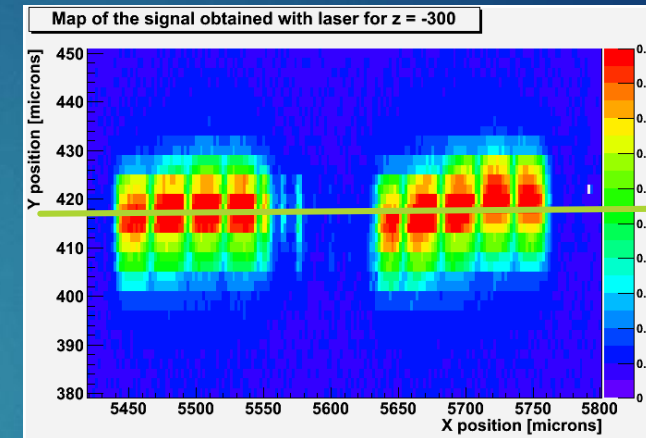
Laser position = 100 μm



Resolution Calculation

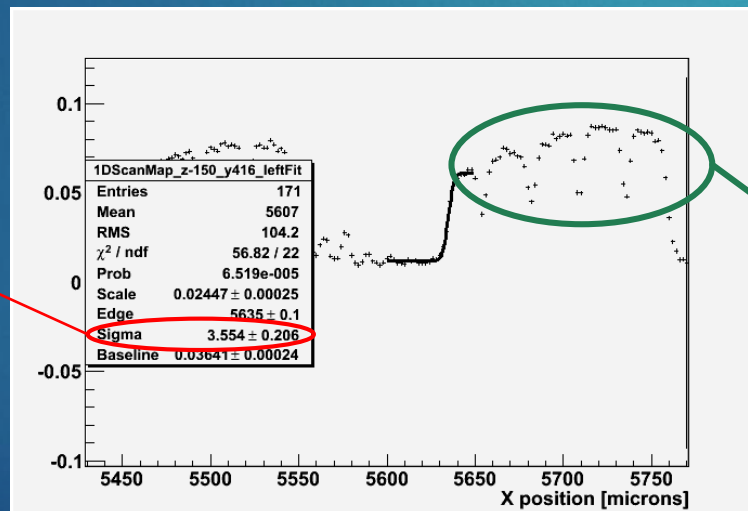
4

- 1-dimensional map at a fixed y coordinate



Y = 416, in the middle of the pixel

- Fit with error function at the right side of the metal strip



Sigma
parameter
our definition
of resolution

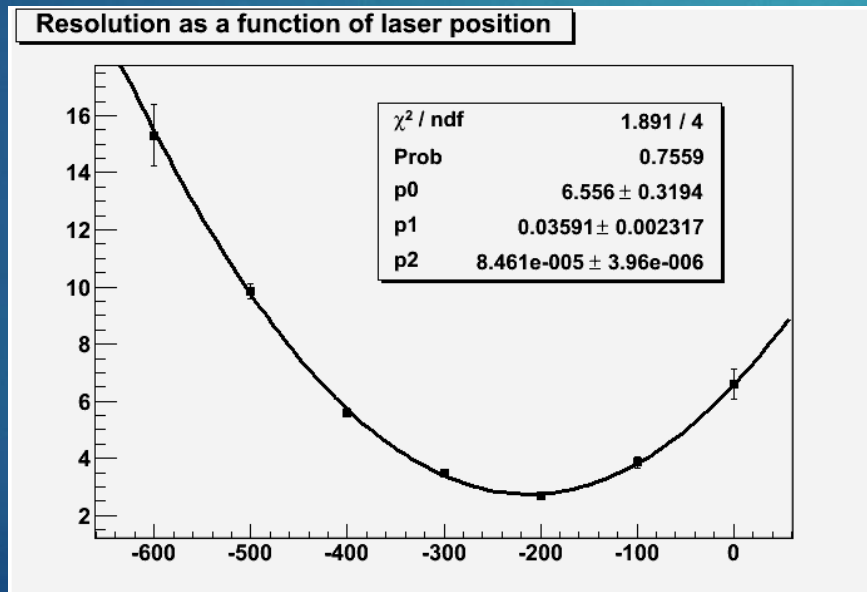
Step of $2\mu\text{m}$ selected when close to the focus point

Strange pattern observed on diodes when reducing the step...!

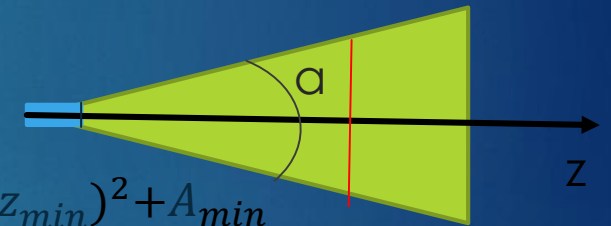
Finding best resolution

5

- Charge injected should be proportional to beam spot area
- In case of conical focusing the area scales as the squared distance



$$A = \tan\left(\frac{\alpha}{2}\right) (z - z_{min})^2 + A_{min}$$



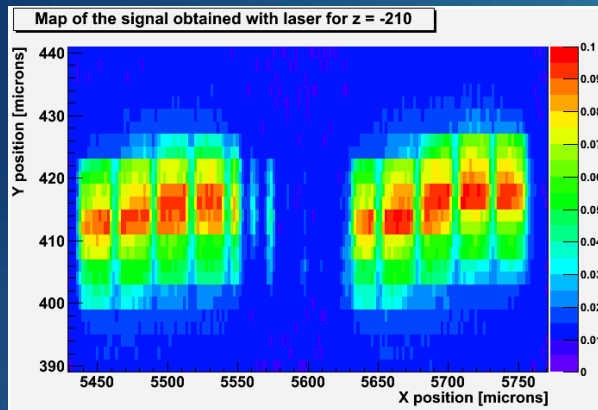
Good fit. Minimum calculated at $-214\mu\text{m}$

Best resolution signal map

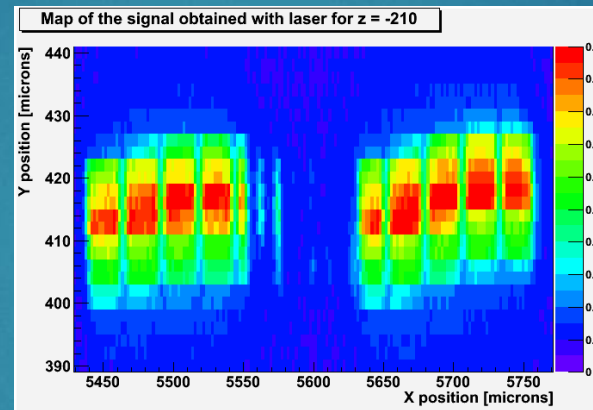
6

- Map at $z = -210\mu\text{m}$, different biases

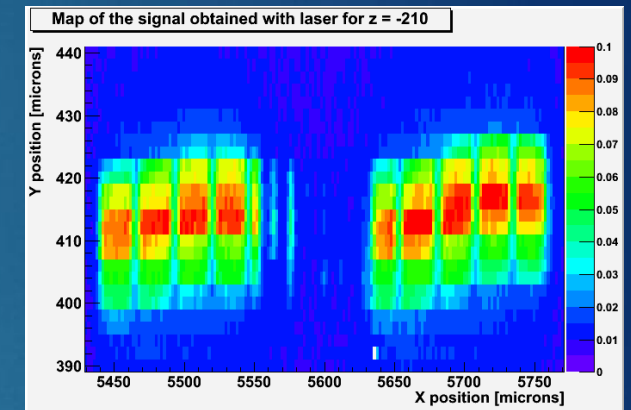
Bias -10 V



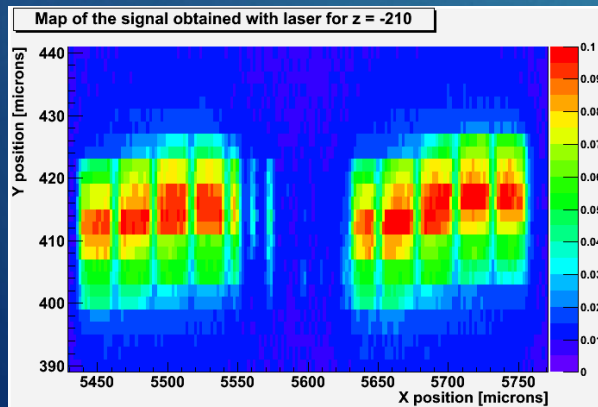
Bias -20 V



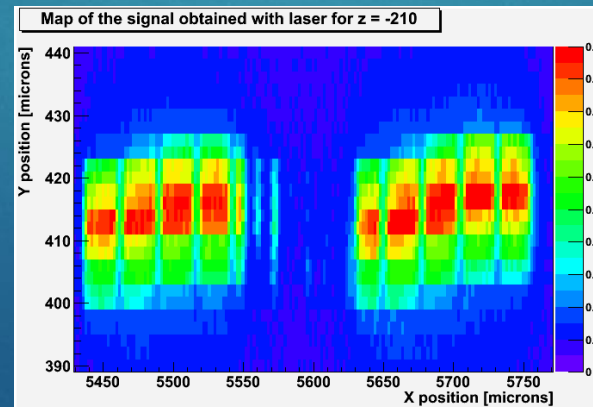
Bias -30 V



Bias -40 V



Bias -60 V



Bias -80 V

