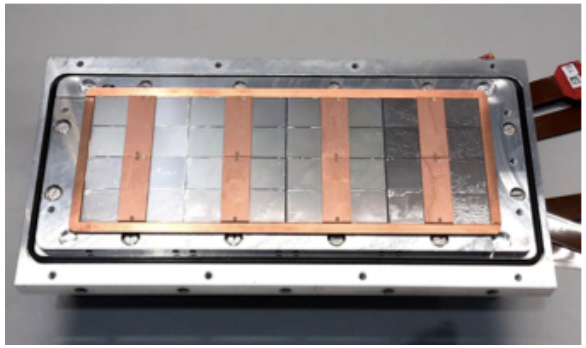
# Quad Module Guard optimization



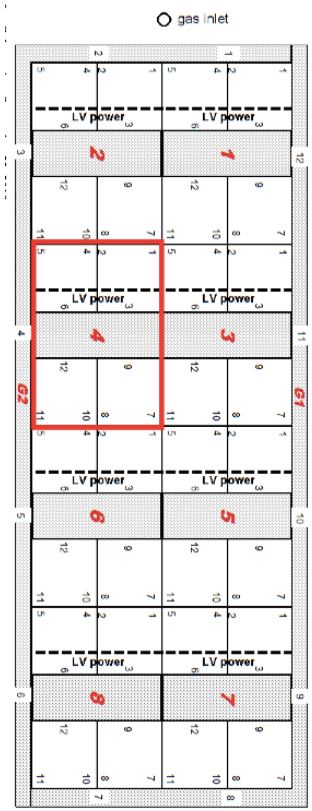
- Laser scan of one quad of the 8-quad module
- Need multiplexer to read out all quads. Not yet ready. So here 1 quad readout.
- Runs 970-984 laser makes a track over two chips; scanning the laser start position in 0.2 mm steps.
- Drift z position fixed at 6 mm from grid
- Another run 985 was taken with improved settings of the guard voltages

# QUAD Module settings

| | Run 970-984 23/8/2019 | Run 985 19/9/2019 | Run 986 2/10/2019 |
|---|---|---|---|
| Guard voltage CH2 | -370 V | -386 | -355 |
| Guard Cage CH4 | -360 V | -372 | -372 |
| (Guard) Wires CH5 | -391? -390 V | -399 | -395 |
| Grid voltage | -340 V | | |
| Drift voltage | -350 V / cm | | |
| Cathode voltage | -1740 V | | |

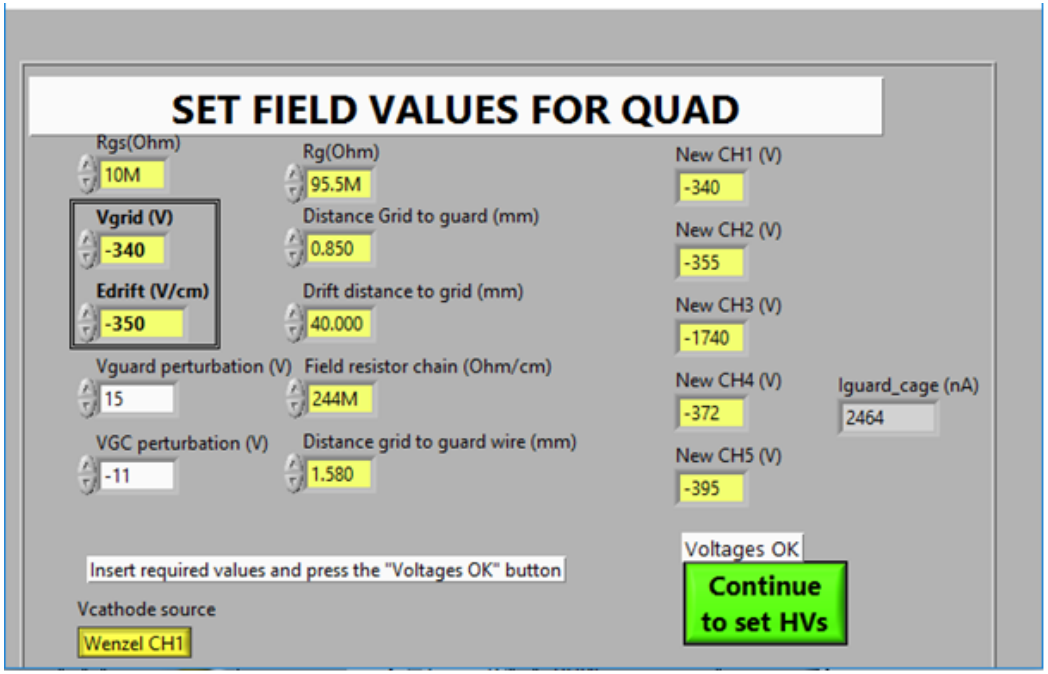
New run propose
CH2 = -355 V
CH4 = -345
CH5 = -375

Orientation of quad



# QUAD Module settings

Run 986




CH1 is Vgrid

CH2 is Vguard (central guard in the middle of the quad)

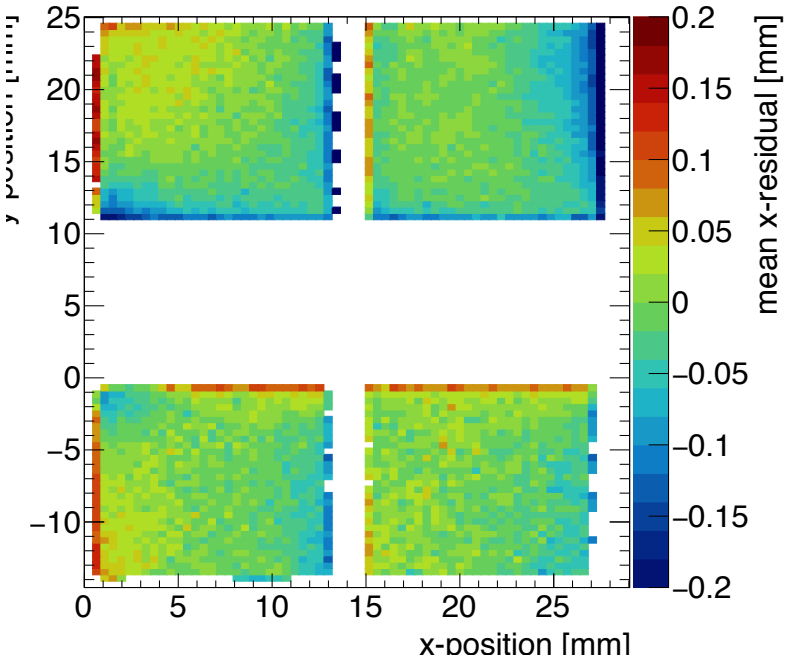
CH3 is Vcathode

CH4 is VguardCage (the guard edge surrounding the 8 quads)

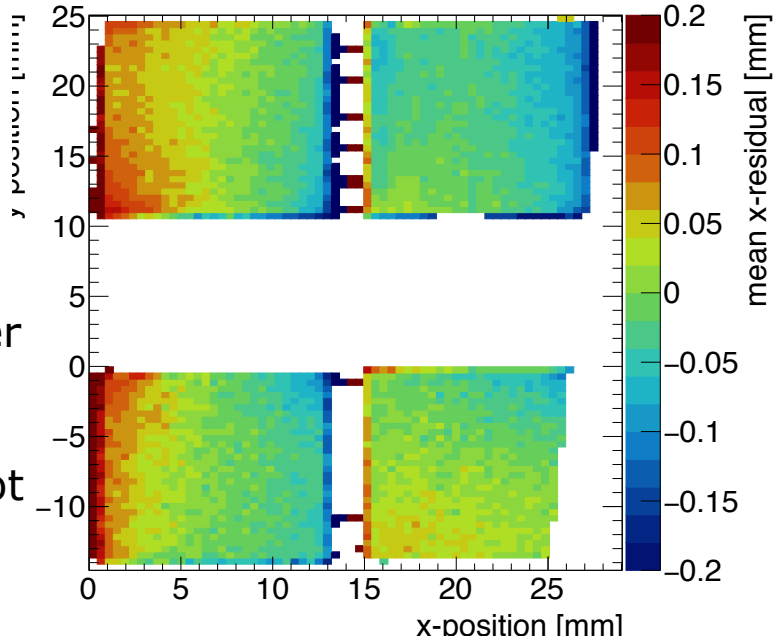
CH5 is Vwire (the wires over de gap between chips)

# QUAD deformations 2D

Runs 985




Run 986



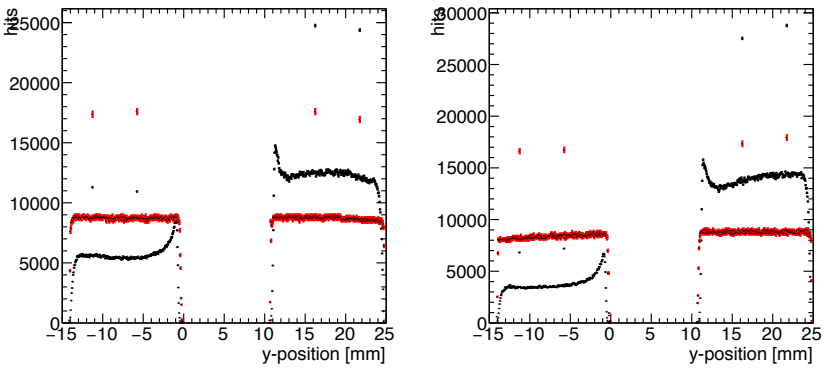

This is contrary to my (too naïve) expectations

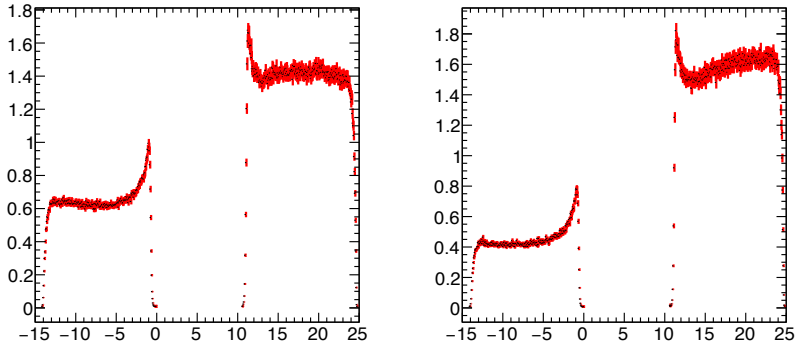
The guard however is better tuned …

The guard cage not

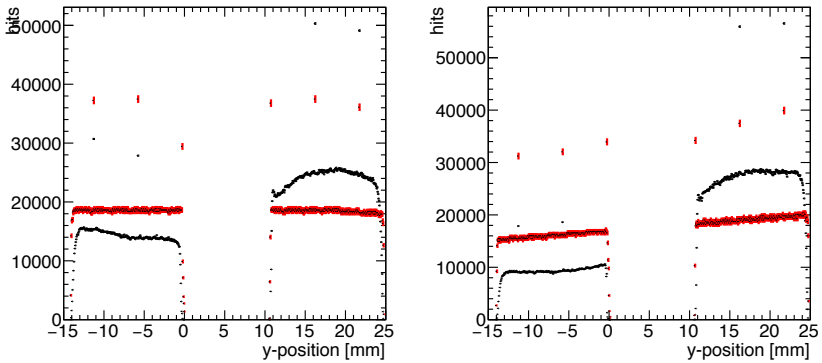
# QUAD Module efficiency vs y

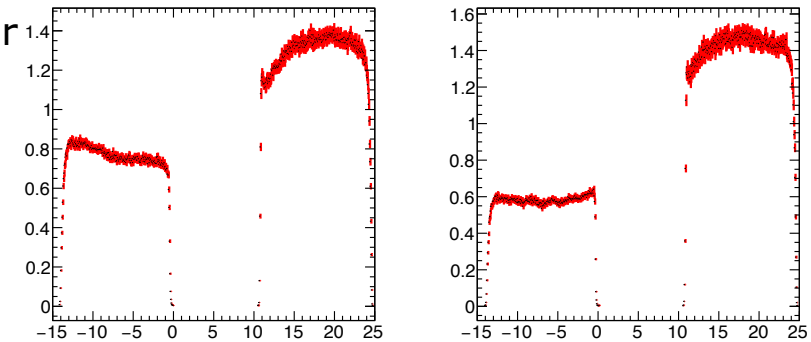
Run 985



Run 986



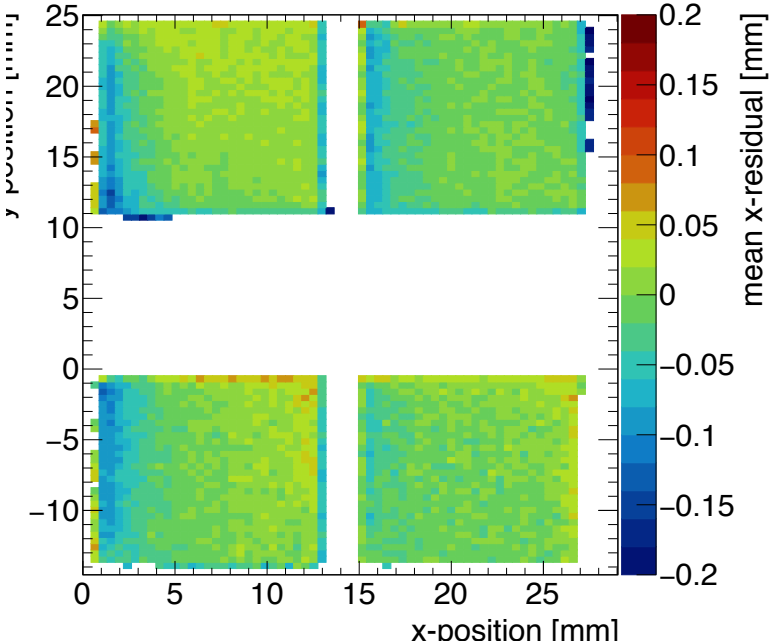



It became better with the new Guard voltage

Efficiency is flatter and no sign of migration

# QUAD deformations 2D

Runs 970-984

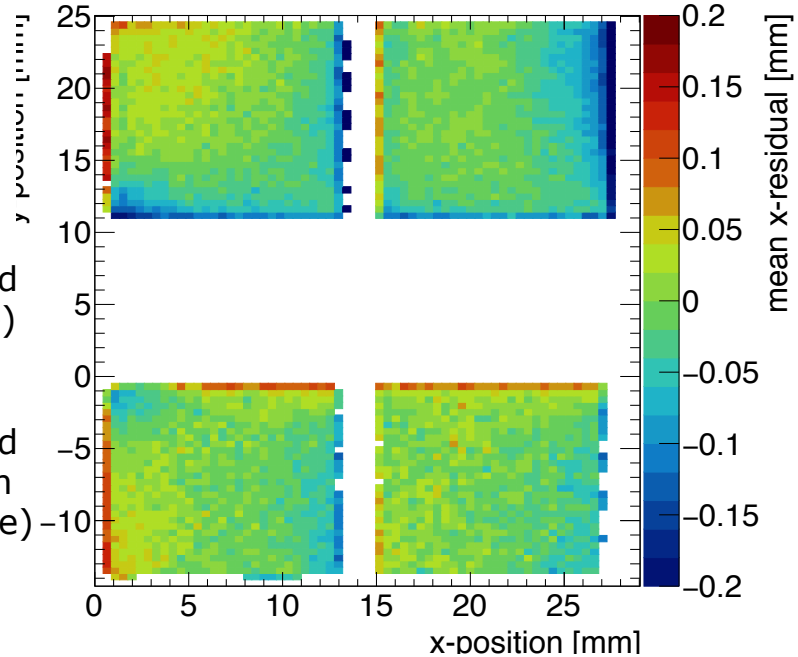



y dependence is introduced due to wrong Guard voltage; wrong direction

The retune of the Guard cage was OK (left edge)

The retune of the Guard wires spoilt the chip on the right top (right side) The change is too big.

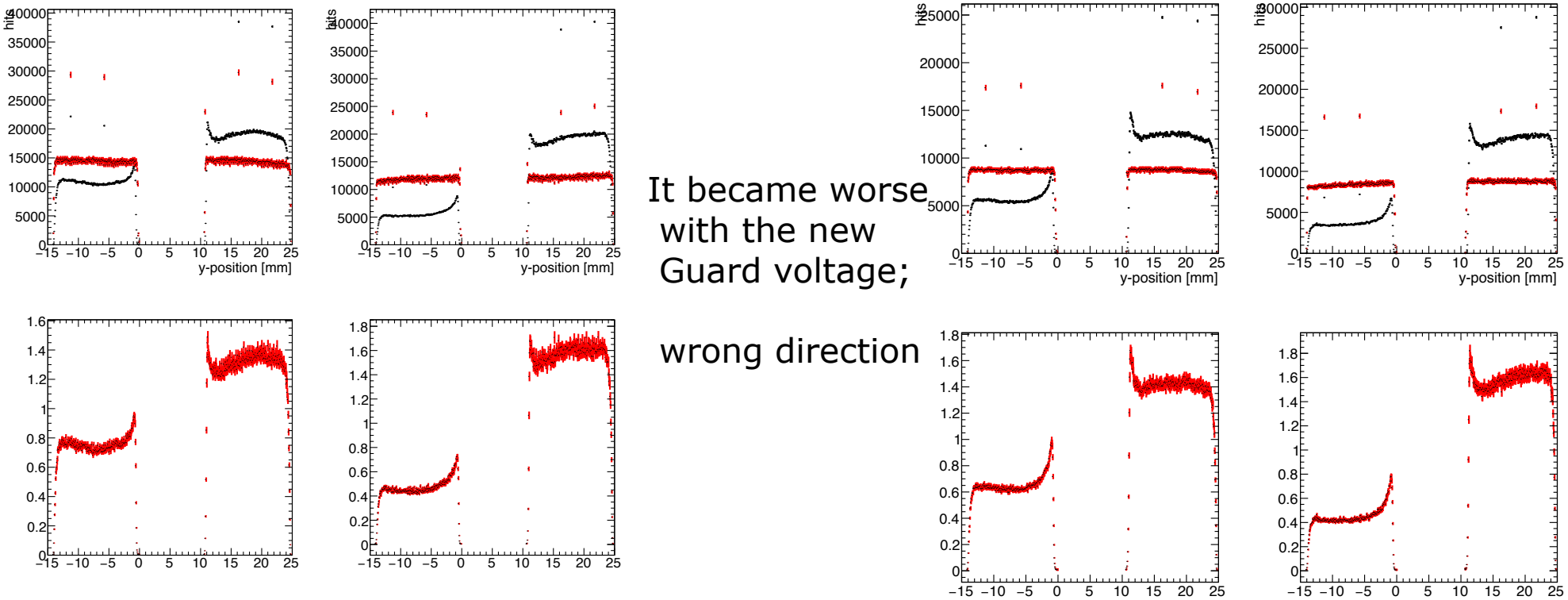
Run 985



# QUAD Module efficiency vs y

Runs 970-984

Run 985

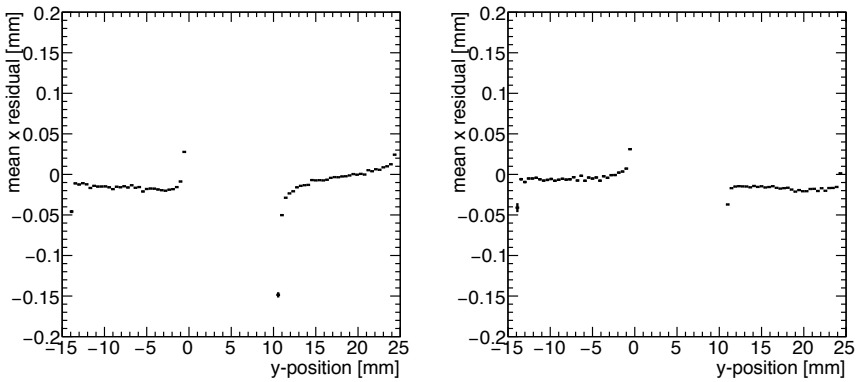



It became worse with the new Guard voltage;

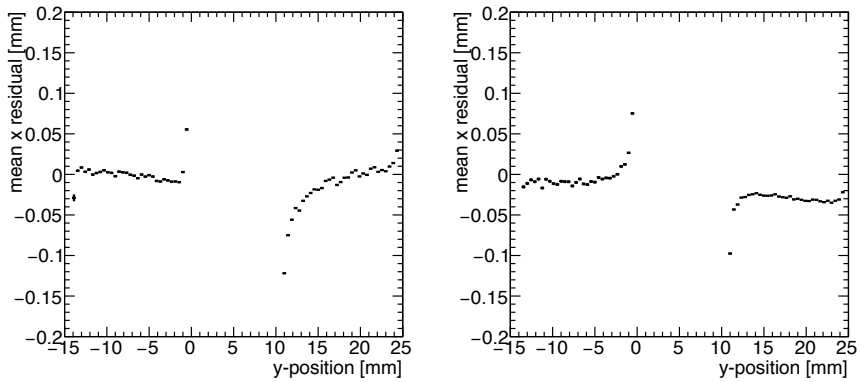
wrong direction

# QUAD deformations y

Runs 970-984




Run 985

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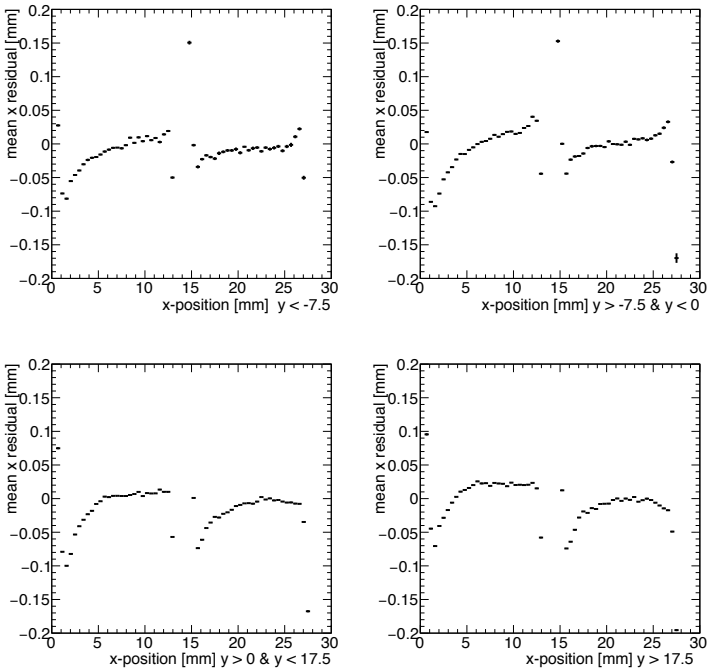
# QUAD deformations x

Runs 970-984

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Run 985