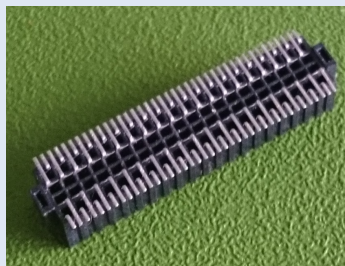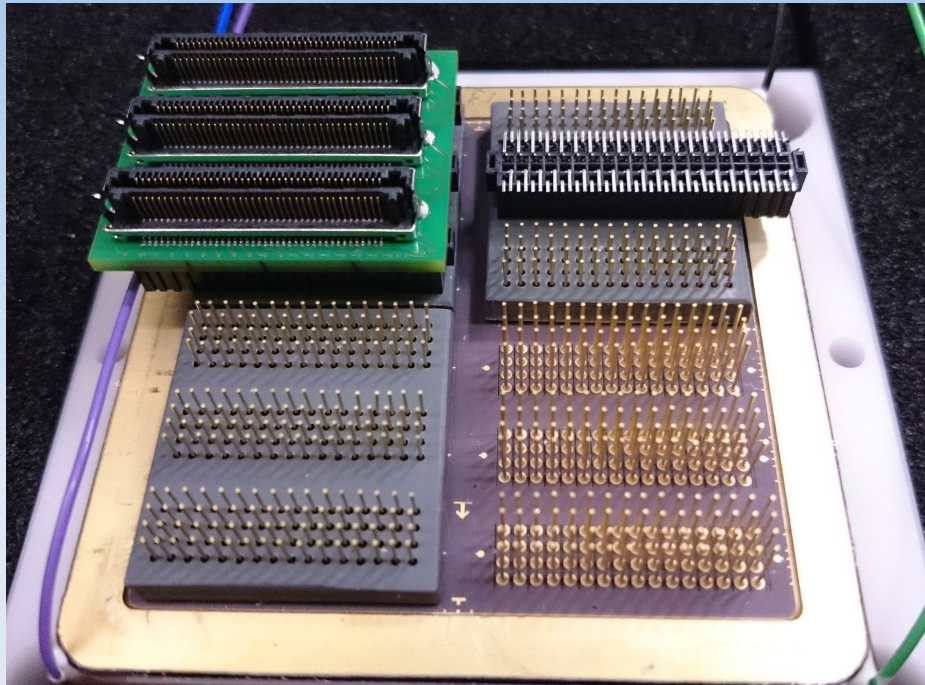# First measurements of Hamamatsu 768 channel 2 inch MCP-PMT
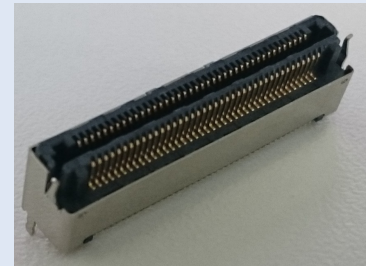
Fred Uhlig, Merlin Boehm, Albert Lehmann, Markus Pfaffinger

Readout (1)

Samtec FOLC plug
0.050" quad row
Part: FOLC-120-02-L-Q

Samtec LSHM plug
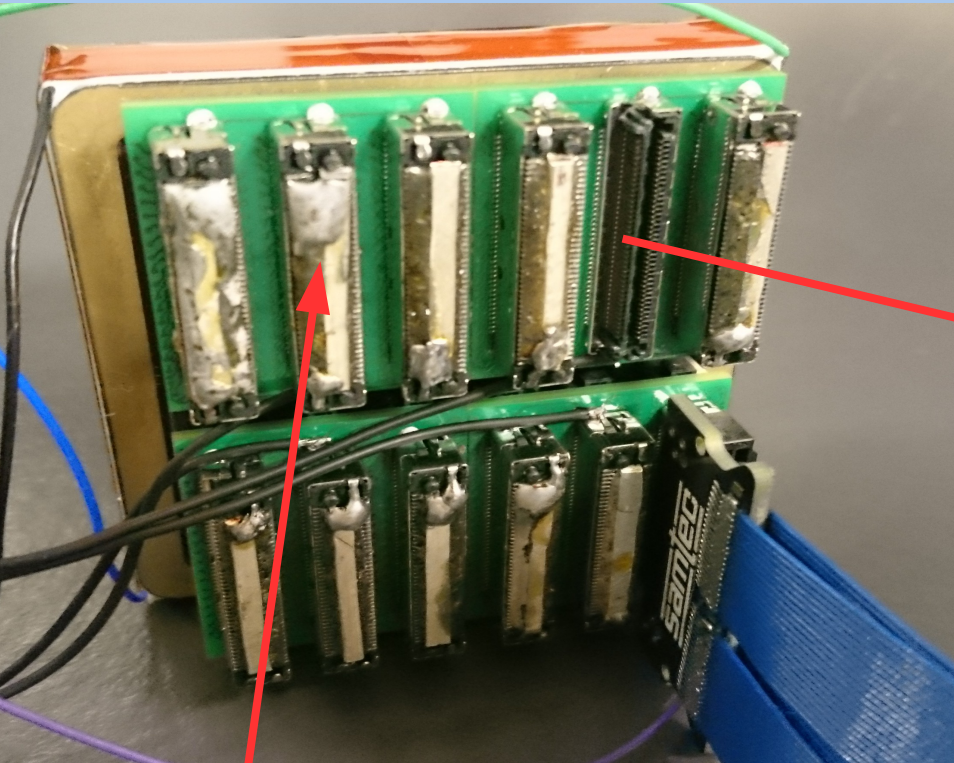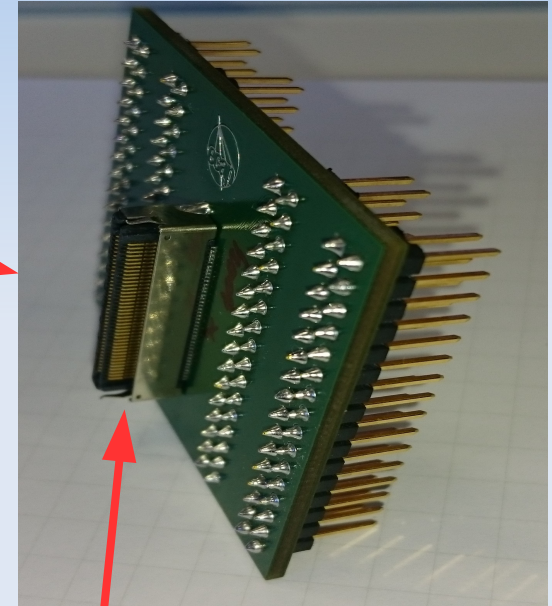2 rows á 40 pins
Part:
LSHM-140-02.5-L-DV-A-S-TR

- 2 inch 768 channel multianode MCP-PMT with 0.5 mm x (6-8) mm anode size

- output of the 768 channels is divided into 12 x 64 pin-blocks consisting of an 4 x 16 array with 0.050" pitch size

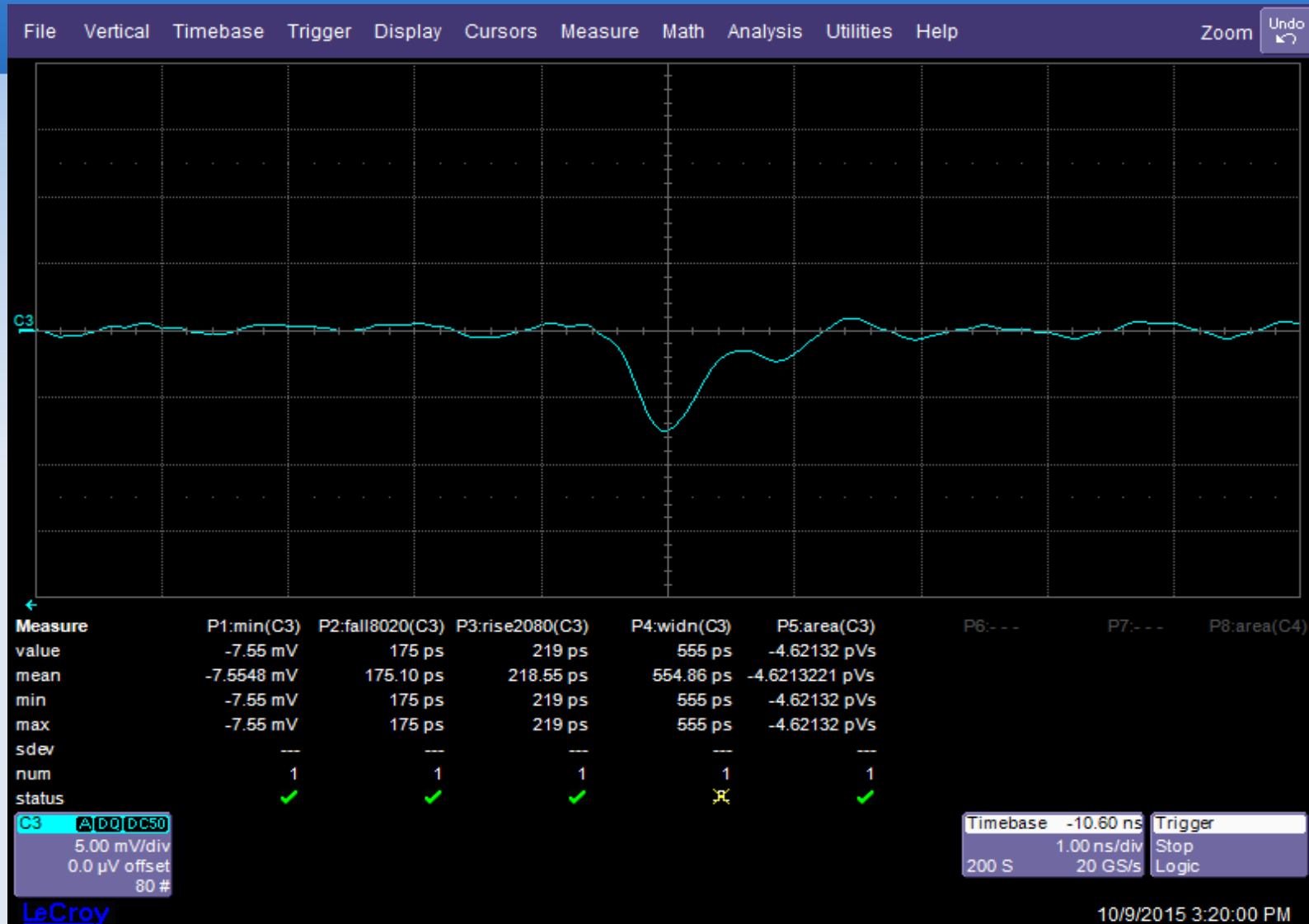# Readout (2)

HLCD/LHSM to 0.1" adapter
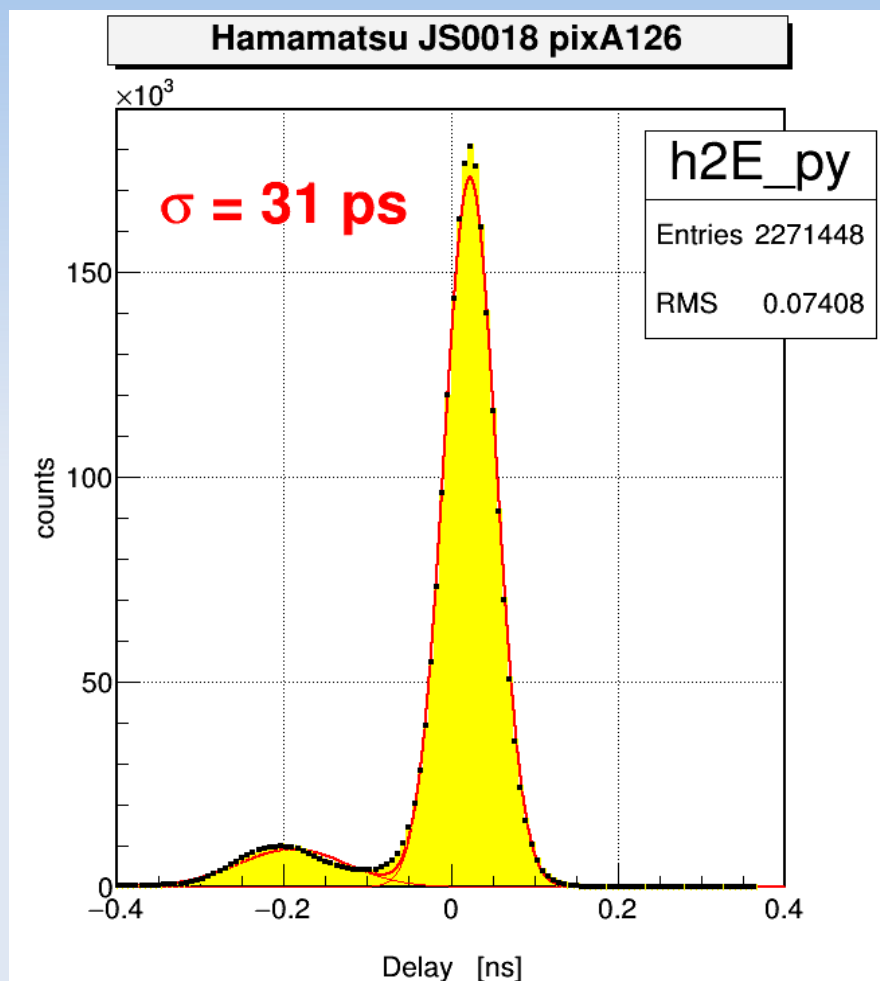
anodes with no
readout are shorted

Samtec HLCD microcoax cable mates with LSHM plug

Signalshape

- very short pulses: rise/fall time 175 / 220 ps and 555 ps width (FWHM)

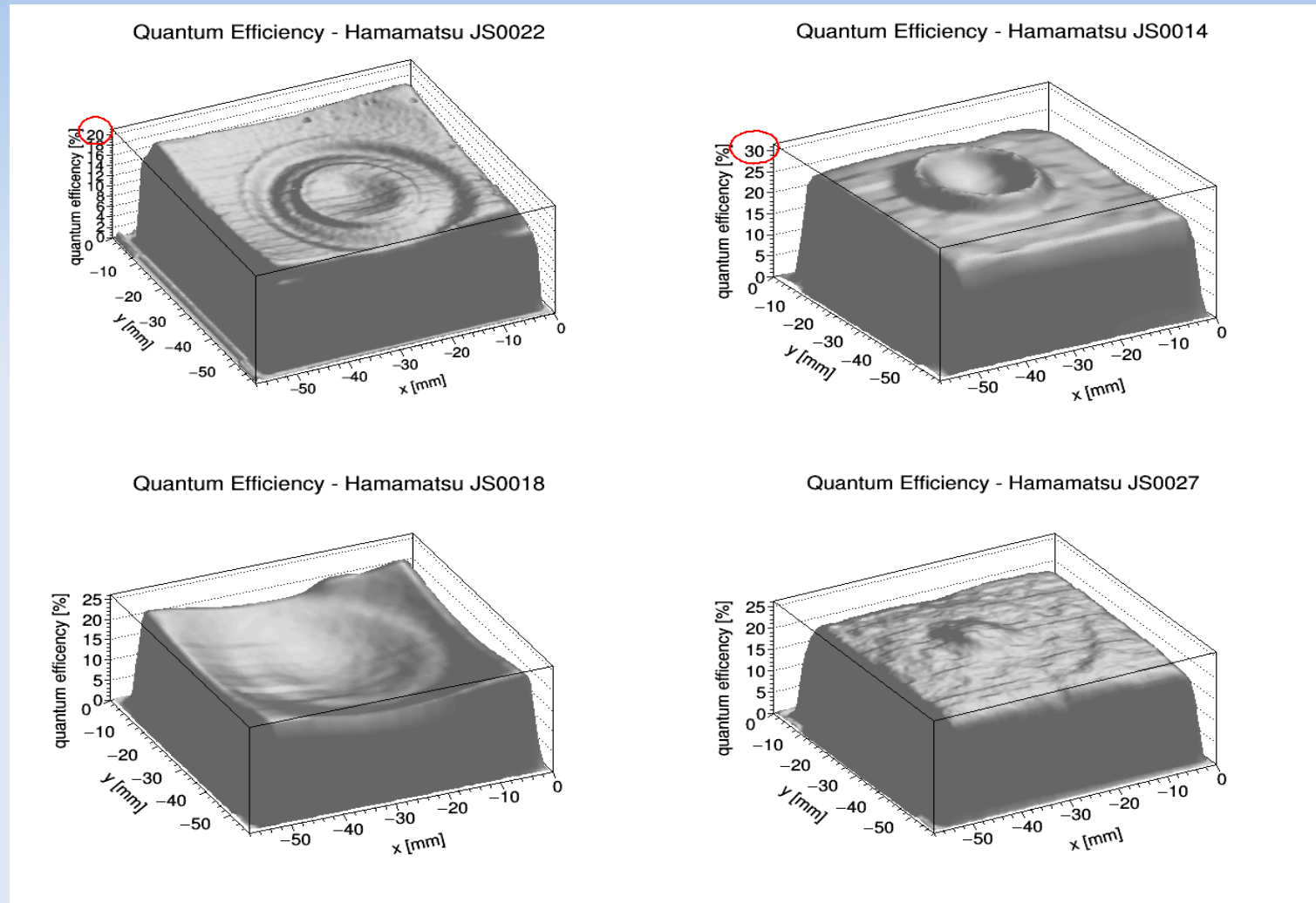- pulse height around 7 to 8 mV and 4.62 pVs/50 Ω = 0.092 pC charge equals 5.8×10^5 gain

Timeresolution

- excellent timeresolution of 31 ps, but in Hamamatsu datasheet ~ 20 ps is written

  → measure more pixels with different amplifiers

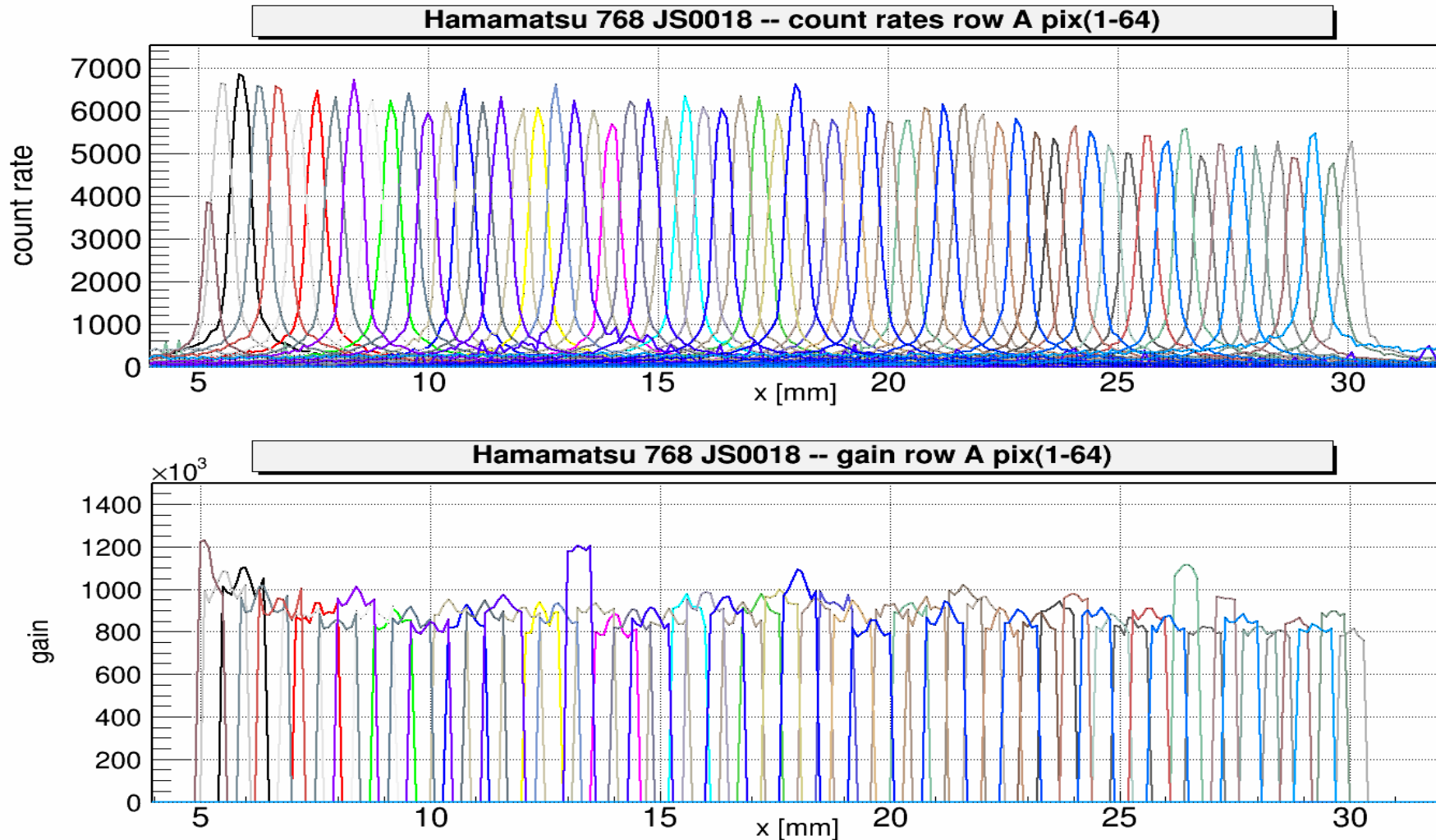# Q.E. surface scans

- so far photocathodes of Hamamatsu 2 inch sensors show different uniformity and values of QE

Gain, rates uniformity

Hamamatsu 768 JS0018 -- count rates row A pix(1-64)

Hamamatsu 768 JS0018 -- gain row A pix(1-64)

- decent uniformity of count rates and gain

Crosstalk

- 9×10^5 gain → 0.144 pC charge → ~ 12 mV pulse height (7.5mV = 0.092 pC measured)

Summary and Outlook

- readout of 768 chans possible

- very short signals → excellent timeresolution

- uniformity of photocathode surfaces in need of improvement

- moderate crosstalk, but thresholds relatively high

- measure ratecapability, timeresolution for different or combined pixels

- full surface scans to check gain/count rate uniformity

- investigate crosstalk in more detail
  - lower thresholds
  - find optimum distance for LASER microfocus