

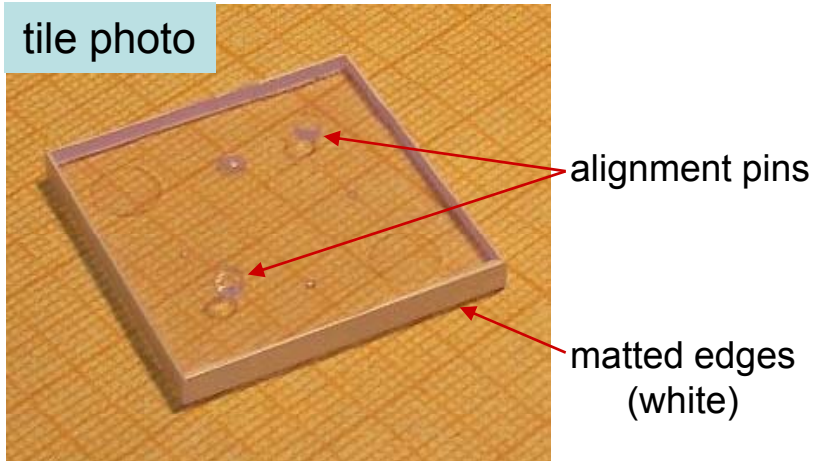
Scintillators and sensors

Roman Mizuk (ITEP, Moscow)

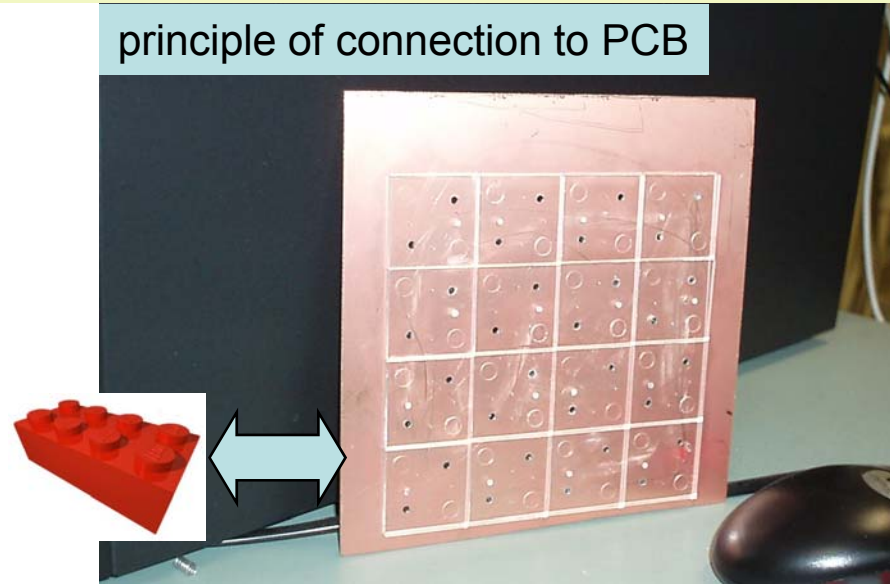
- Tile size tolerance
- MRS APD news
- Plans

Reminder: tile layout

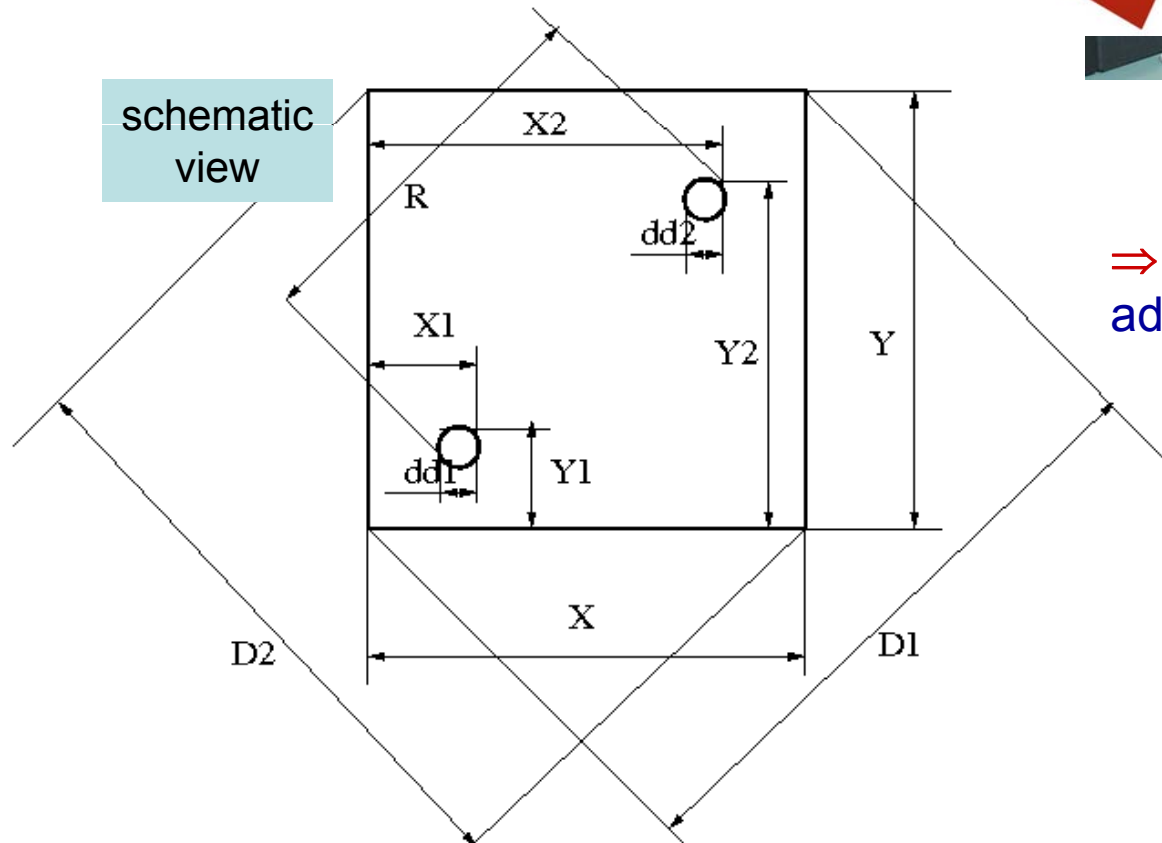
tile photo



principle of connection to PCB



schematic view

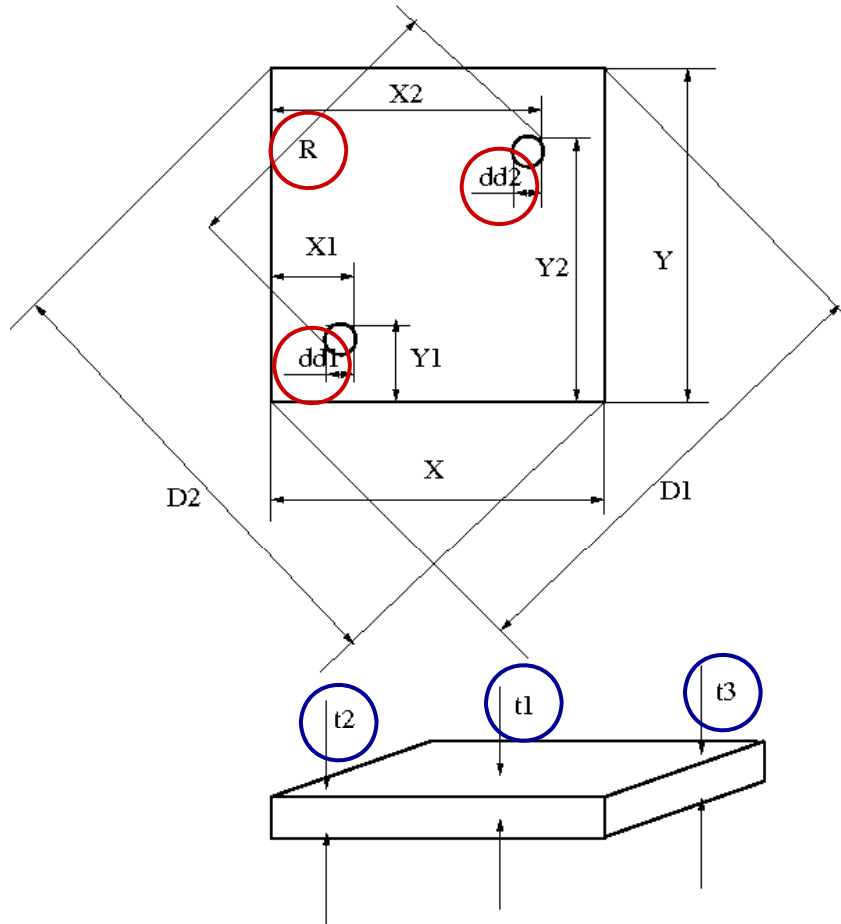


⇒ Accuracy in alignment pins is adequate for firm connection to PCB.

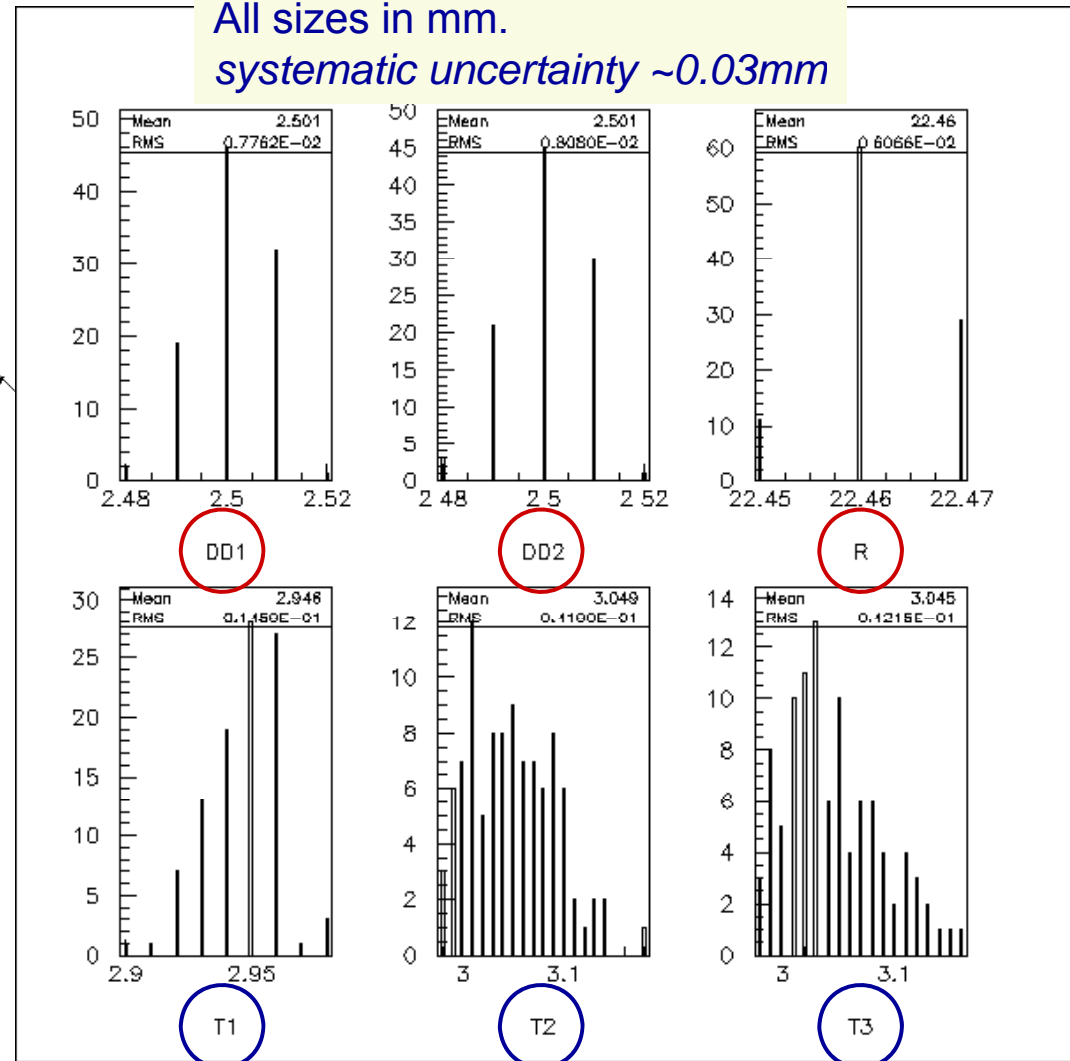
Tolerance in tile size after matting of tile edges?
(important for PCB design) ⇒

Tolerance: pin diameter, tile thickness

Statistics of 100 tiles.



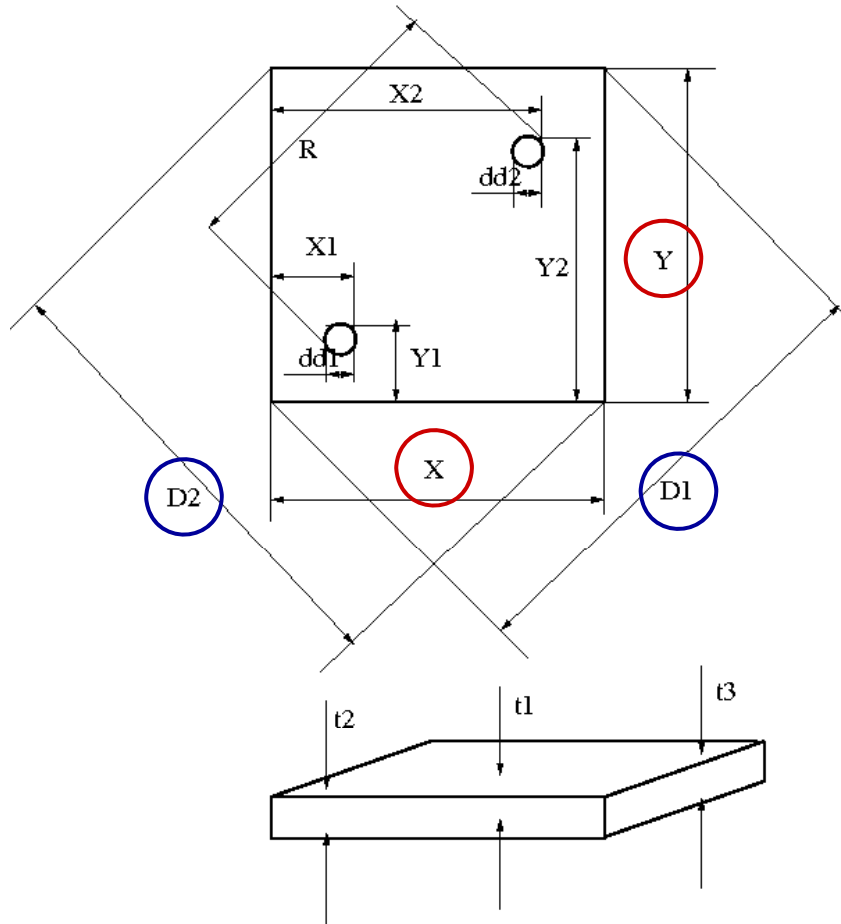
All sizes in mm.
systematic uncertainty ~0.03mm



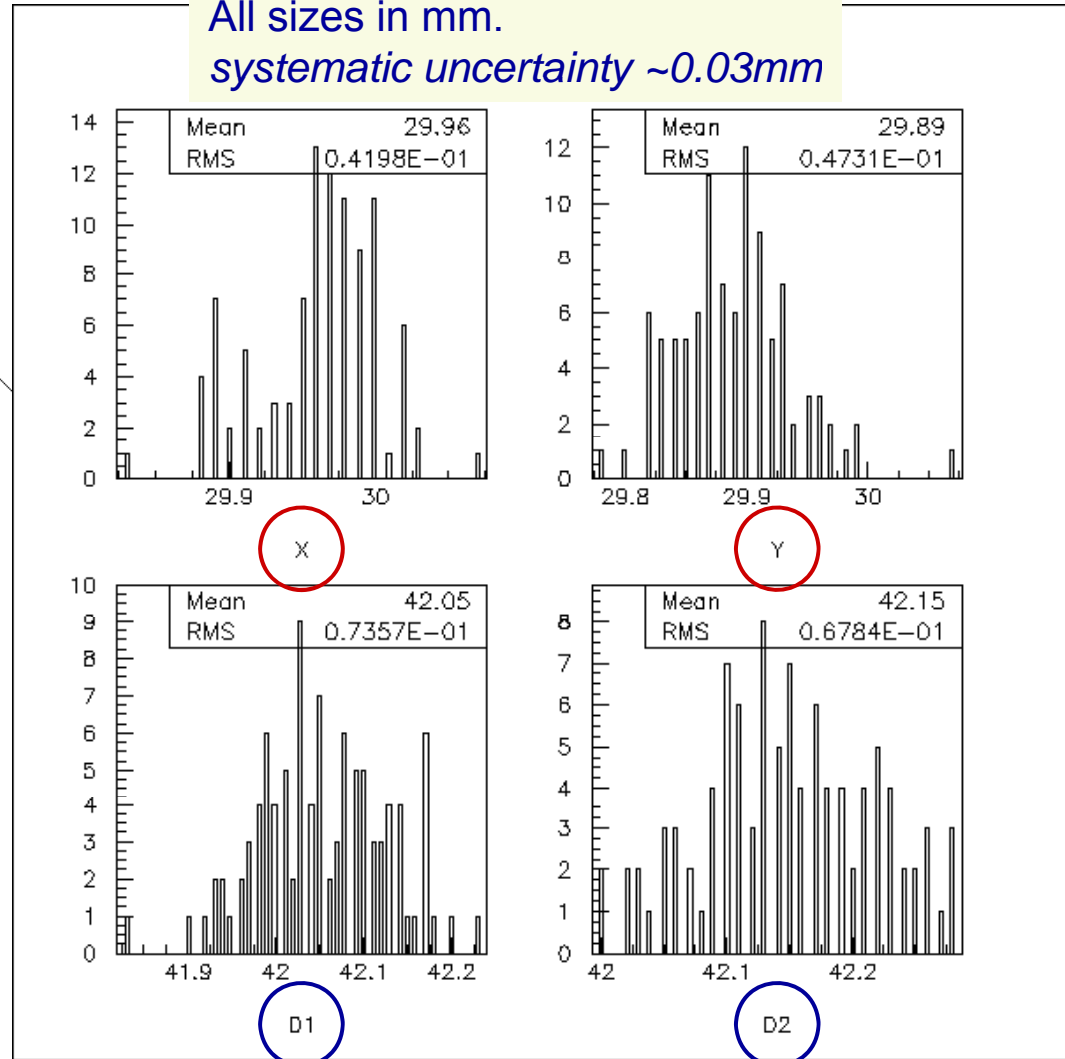
- ⇒ High accuracy in pin diameter and position.
- ⇒ ~100 μm increase of tile thickness at edges after matting.

Tolerance: tile size

Statistics of 100 tiles.



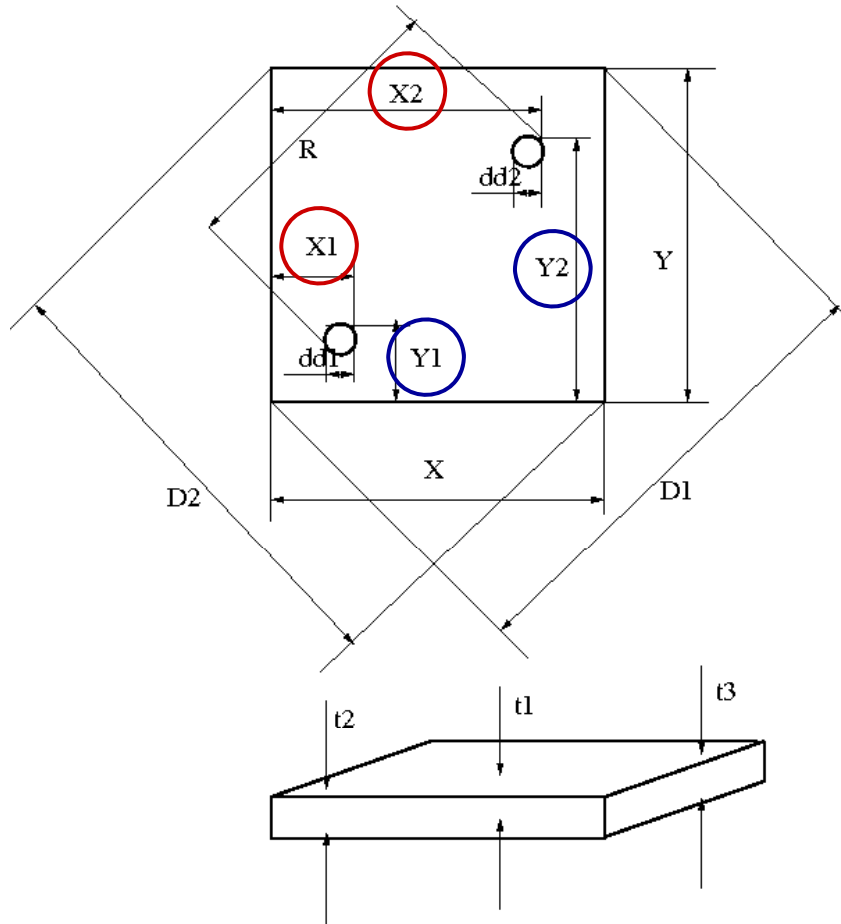
All sizes in mm.
systematic uncertainty ~0.03mm



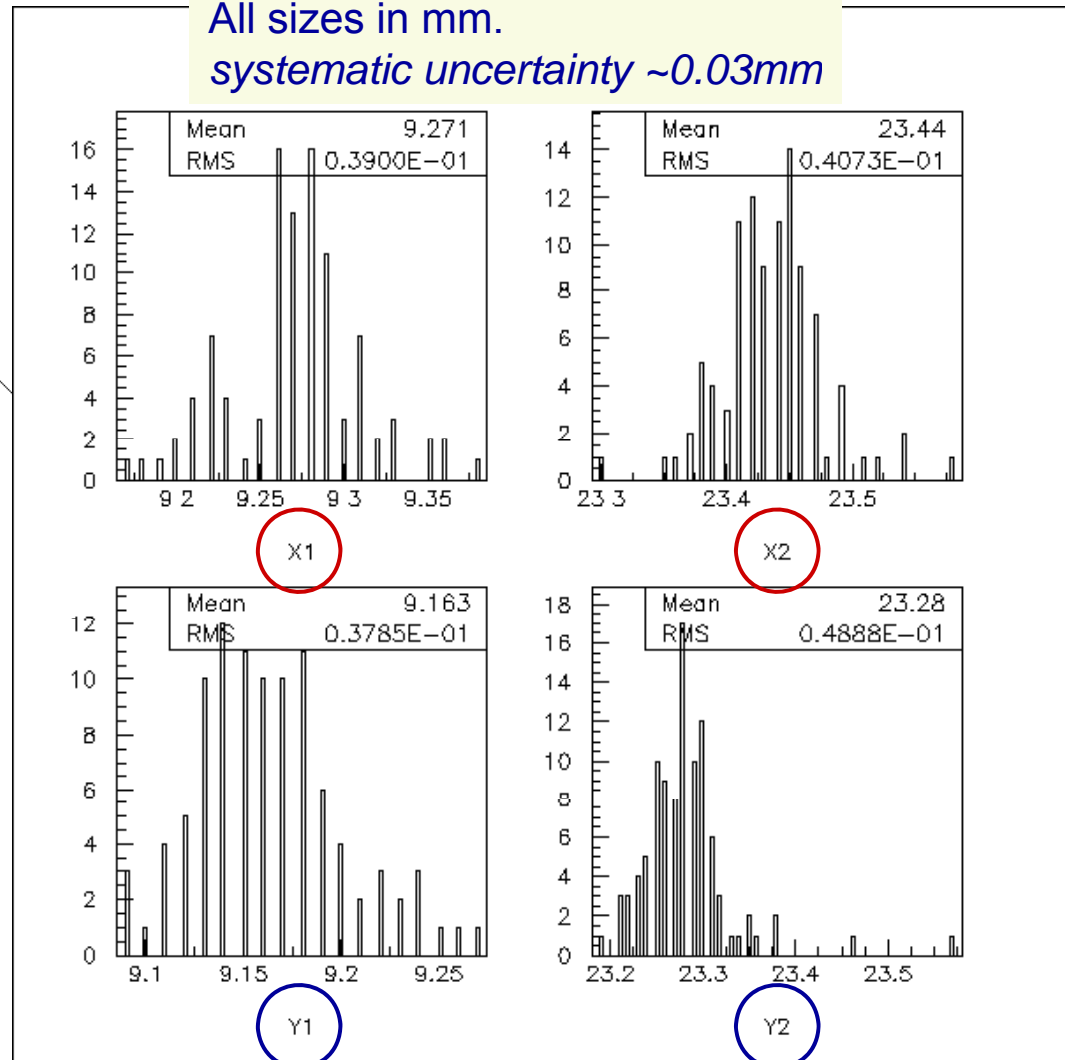
- ⇒ R.M.S. of tile size distribution $\sim 50\mu\text{m}$.
- ⇒ spread $< 200\mu\text{m}$.

Tolerance: pin position

Statistics of 100 tiles.

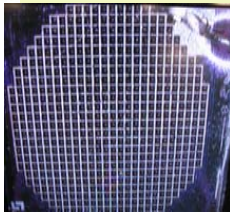


All sizes in mm.
systematic uncertainty ~0.03mm



- ⇒ R.M.S. of pin position distribution $\sim 40\mu\text{m}$.
- ⇒ spread $< 150\mu\text{m}$.

Sensors: reminder

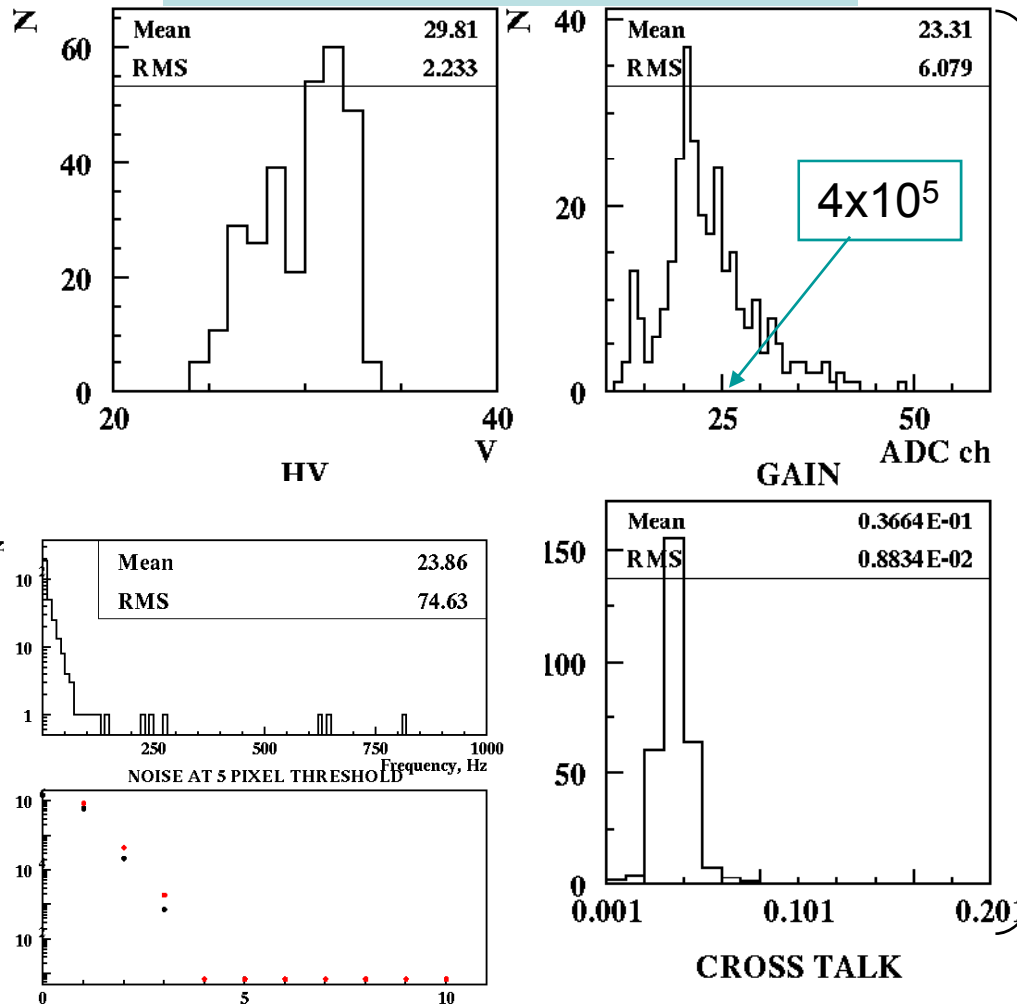


MRS APD from CPTA ⇒

low x-talk (~3.6%)
556 cells (dynamic range)

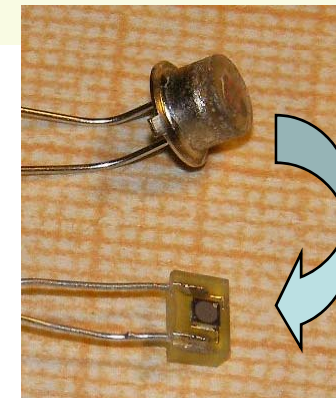
⇒ Working point 15p.e. → 10p.e.
for 30x30x3mm² tile.

MRS APD parameters at Np.e.=10

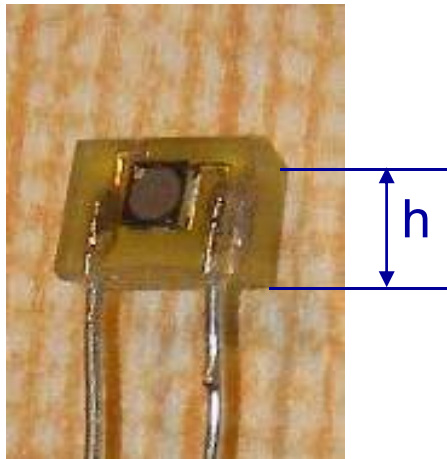


Noise frequency at 5 pixel threshold
is below 100Hz.

300 MRS APD (transistor package)
were tested.



300 MRS APD (rectangular package)
ordered.



Delivery of rectangular type MRS APD expected end of May – delayed.

Currently producer is cutting extra height.

Delivery of first 150 MRS APD promised this week.

Milling hole for sensor in tiles – wait for MRS APD delivery (tolerances).

First 50-100 fully equipped tiles can be ready in ~3 weeks.

Order new casting form with changed layout of alignment pins and hole for sensor – wait for MRS APD delivery (tolerances).

