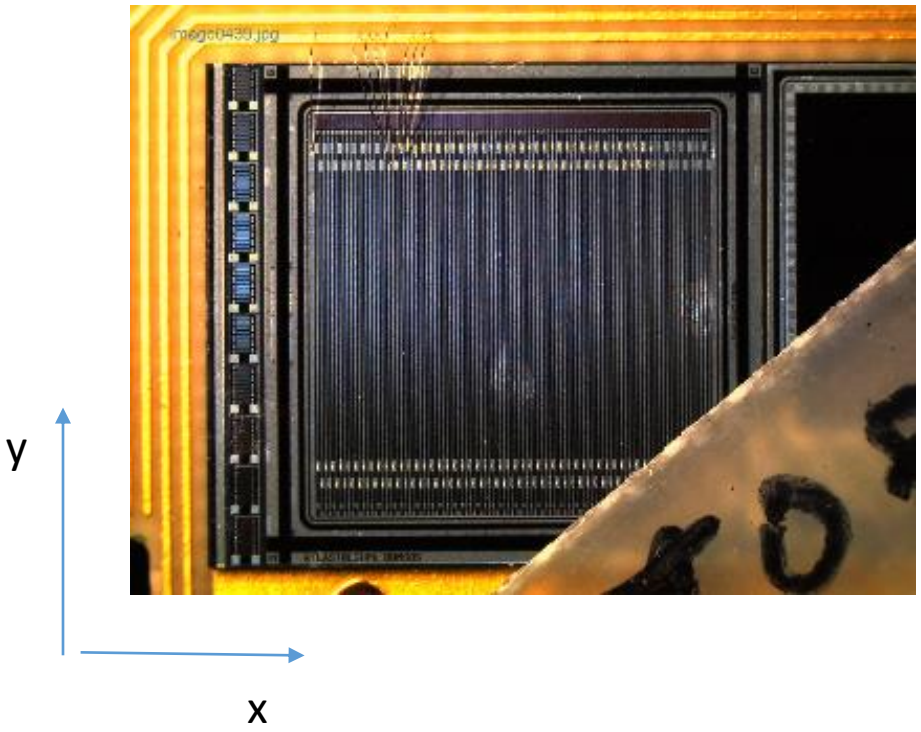
TCT test

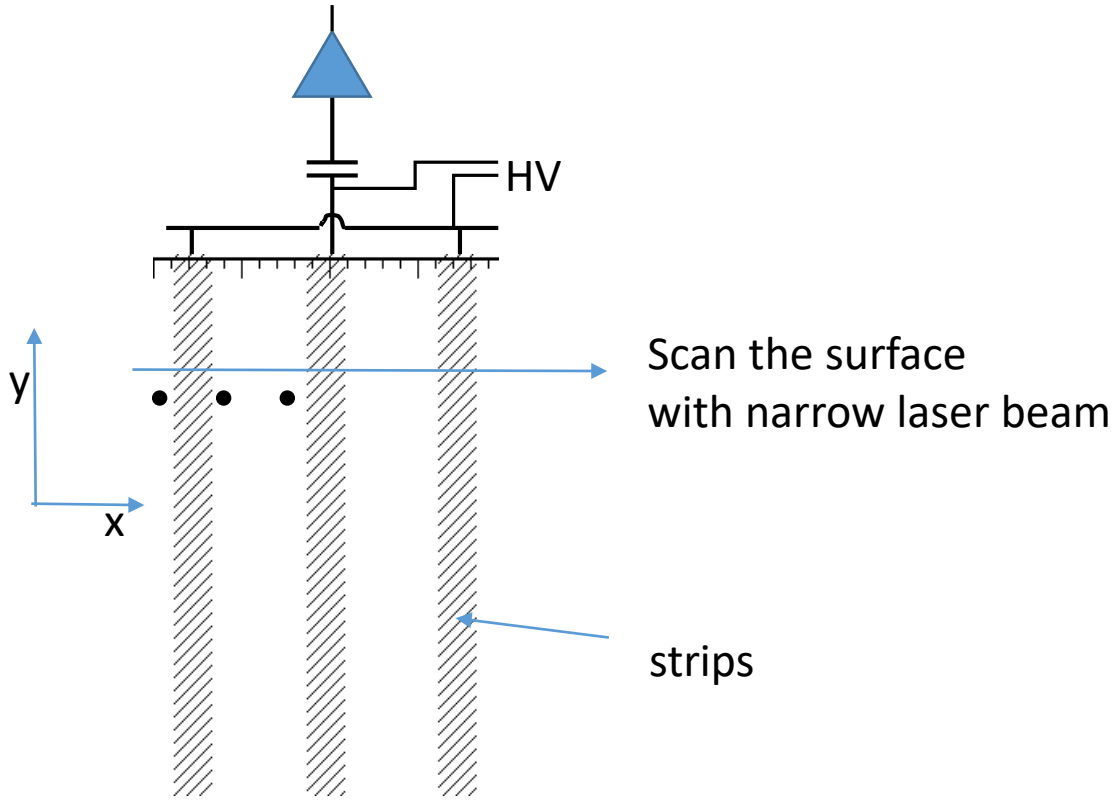
Samples:

VPX37411 – W00513 (irradiated with 24 GeV protons to 1.6e15 neq/cm2)
VPX37412 – W00704 (irradiated with neutrons to 1.6e15 neq/cm2)

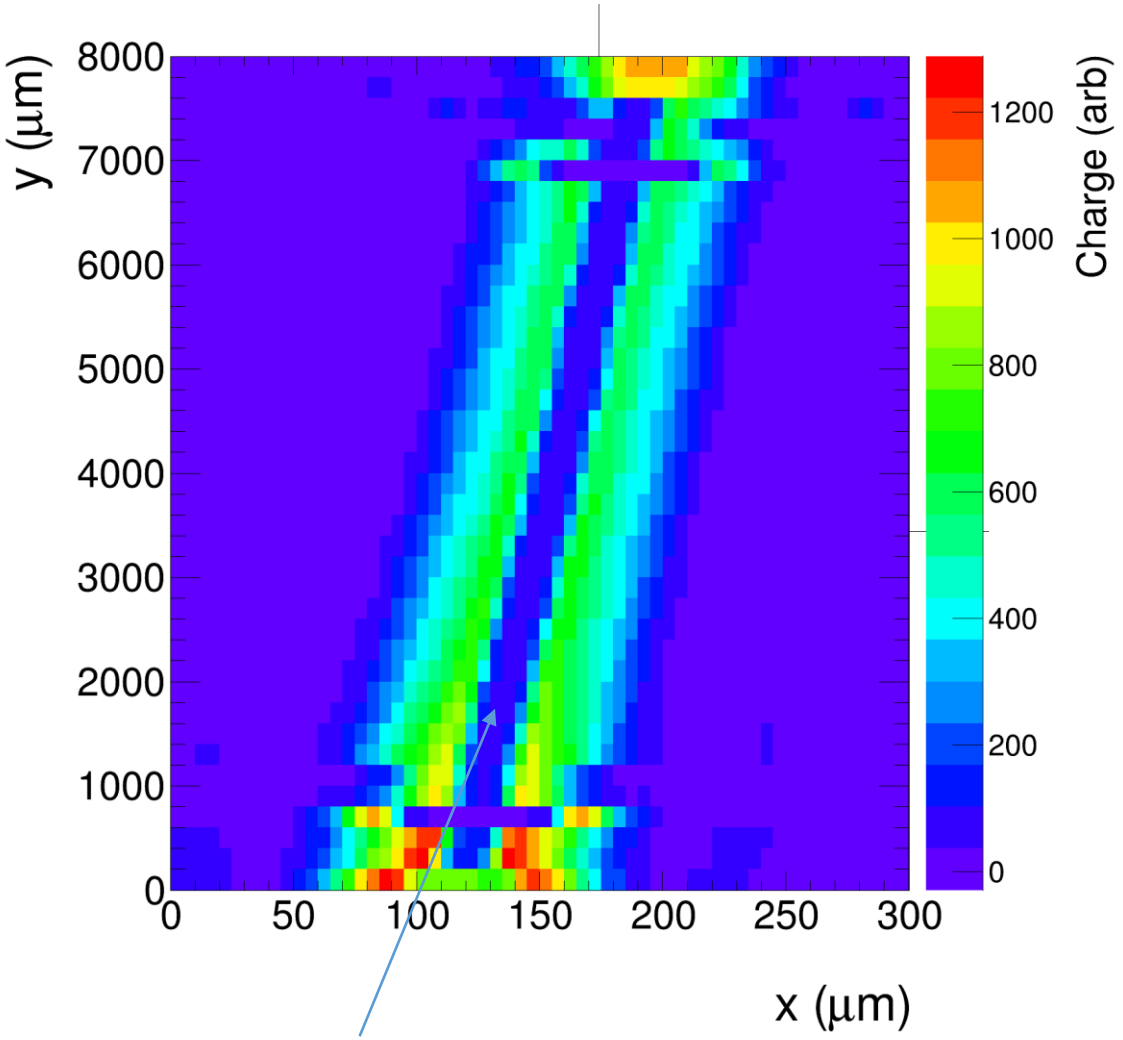
Top TCT

- narrow laser beam (~ 10 µm at FWHM) directed to the surface of the sensor
- scan the surface: 5 µm steps in x, 200 µm steps in y
- at each position measure collected charge caused by short (1 ns) IR laser pulse on the strip connected to the amp.



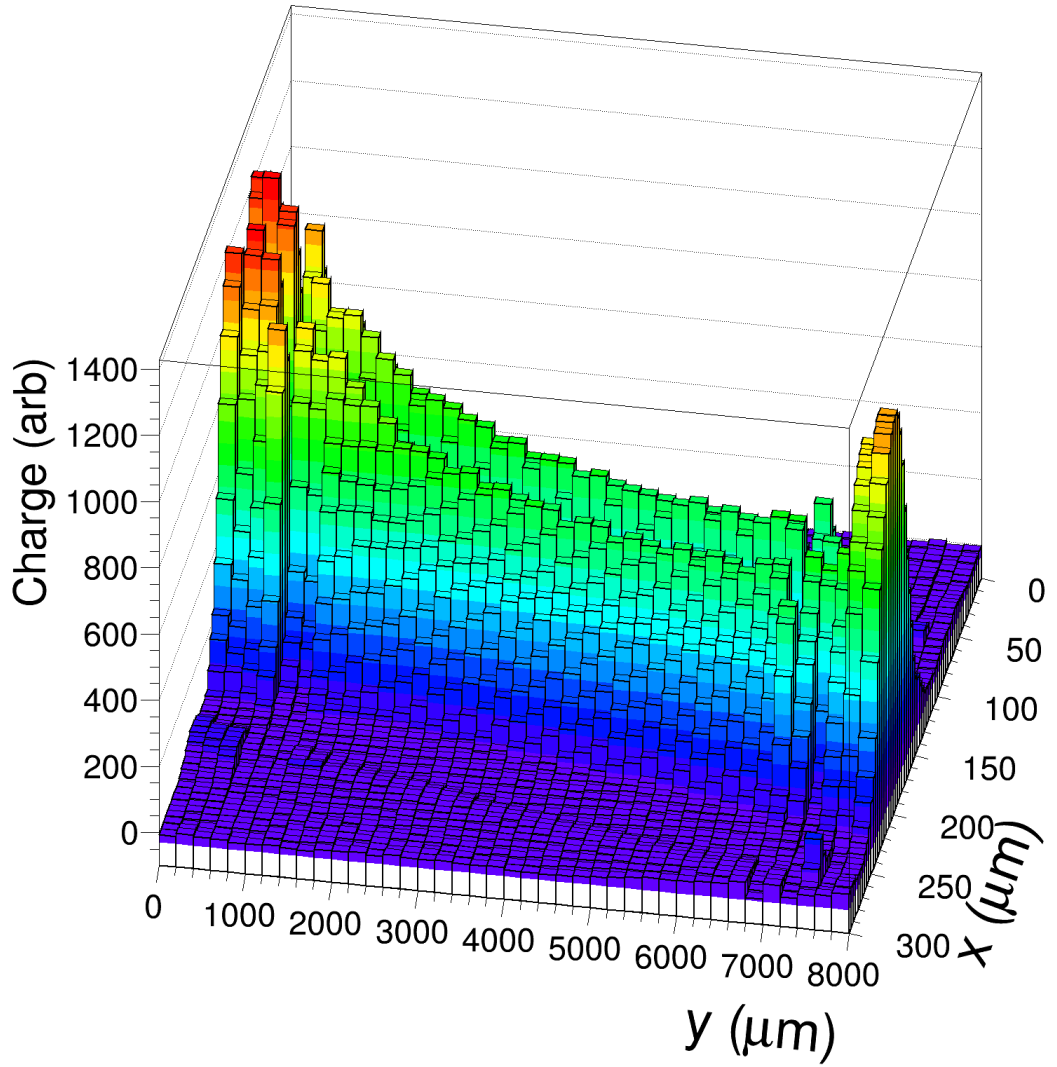


IRRAD sample, Bias = 500 V



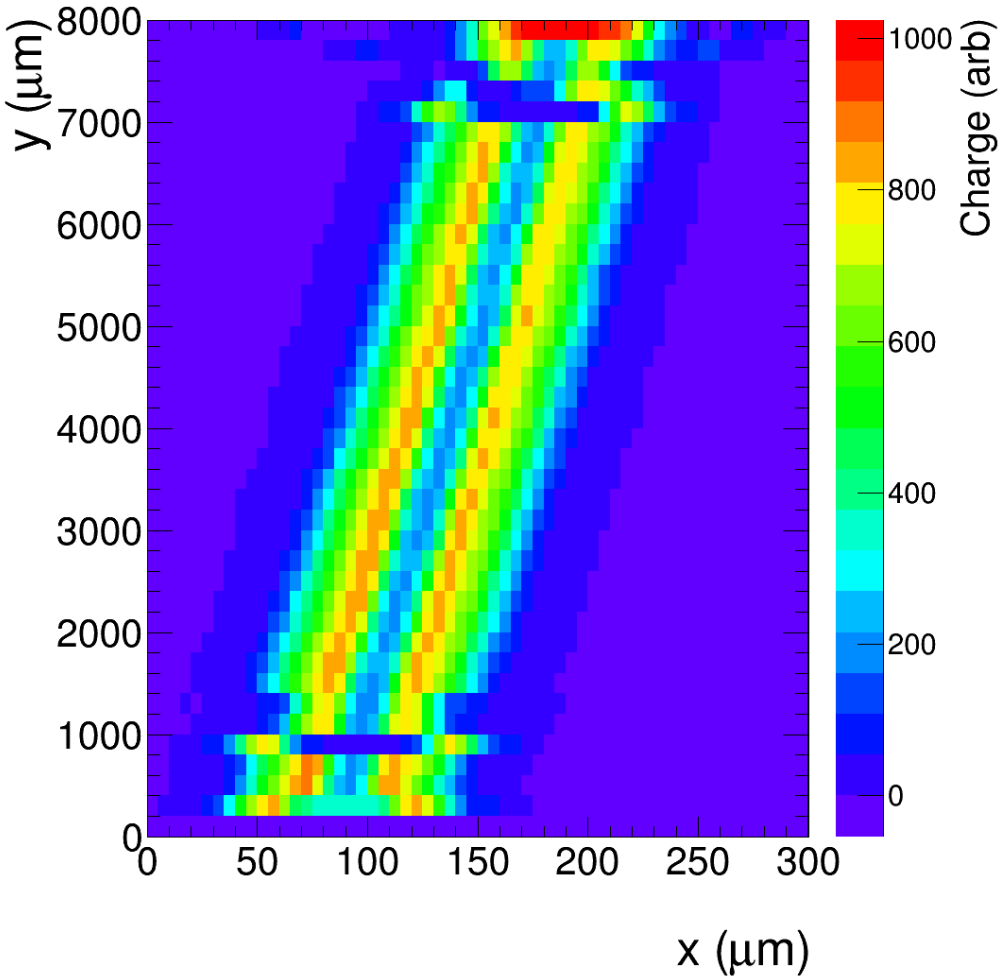
Strip metal

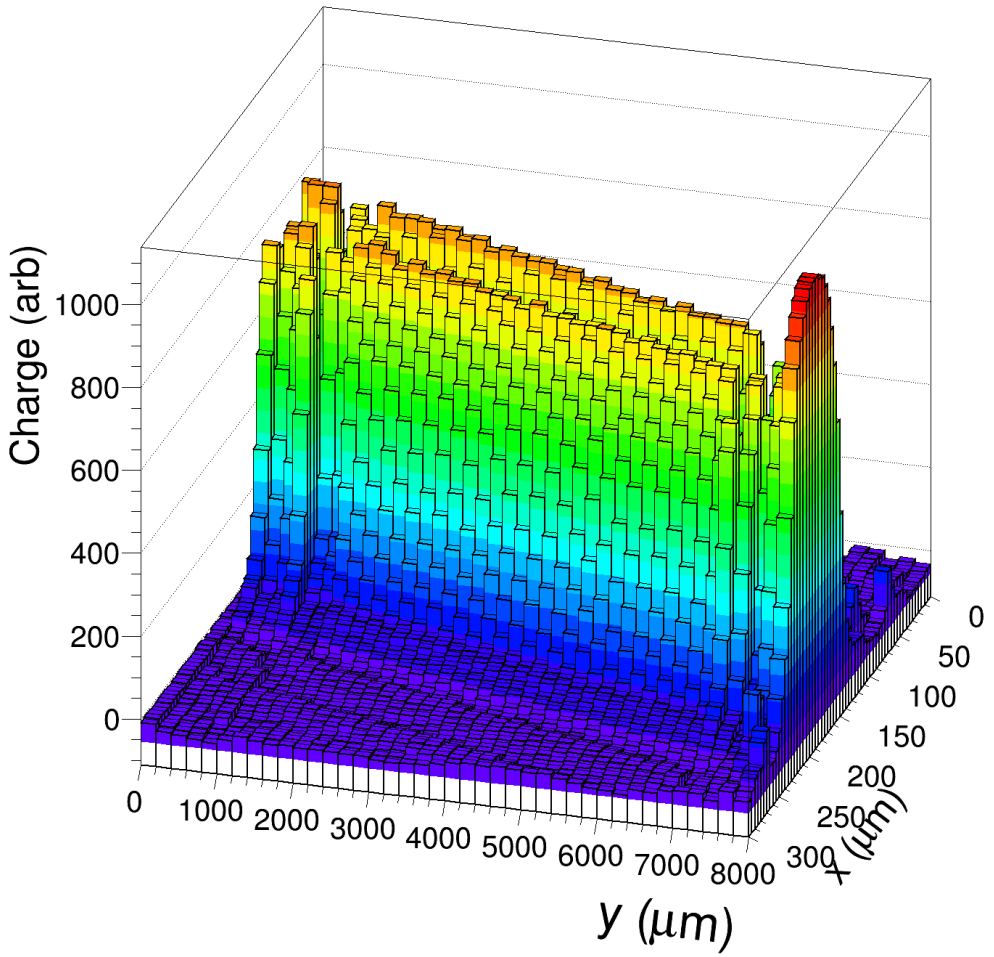
(detector not perfectly aligned with y axis of the TCT system)



Slope of collected charge along the strip can be seen

Detector irradiated with neutrons, Bias = 500 V

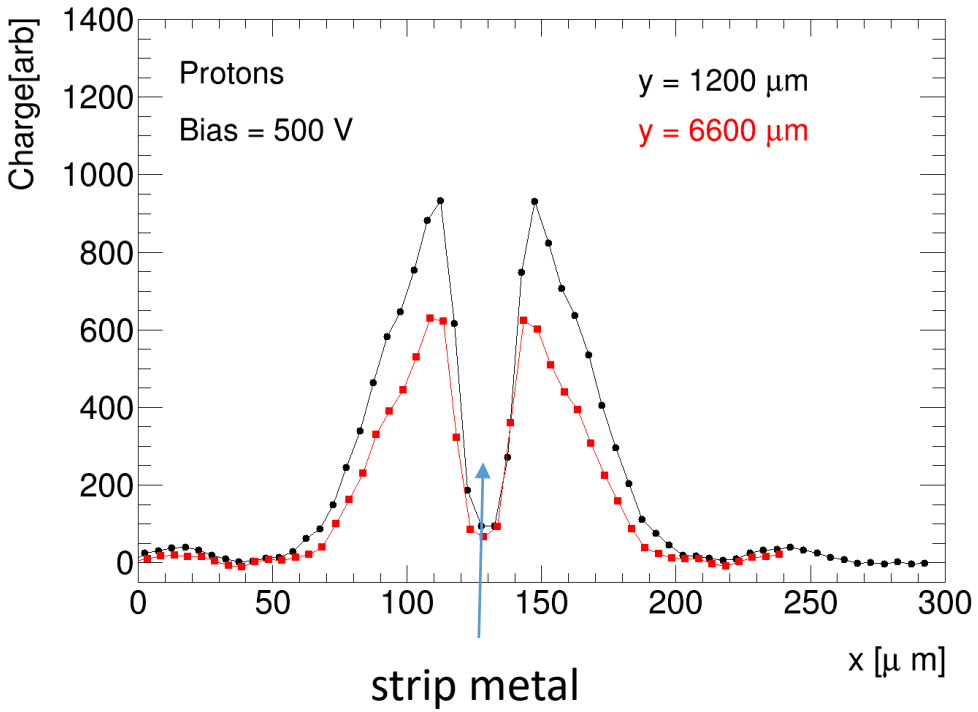


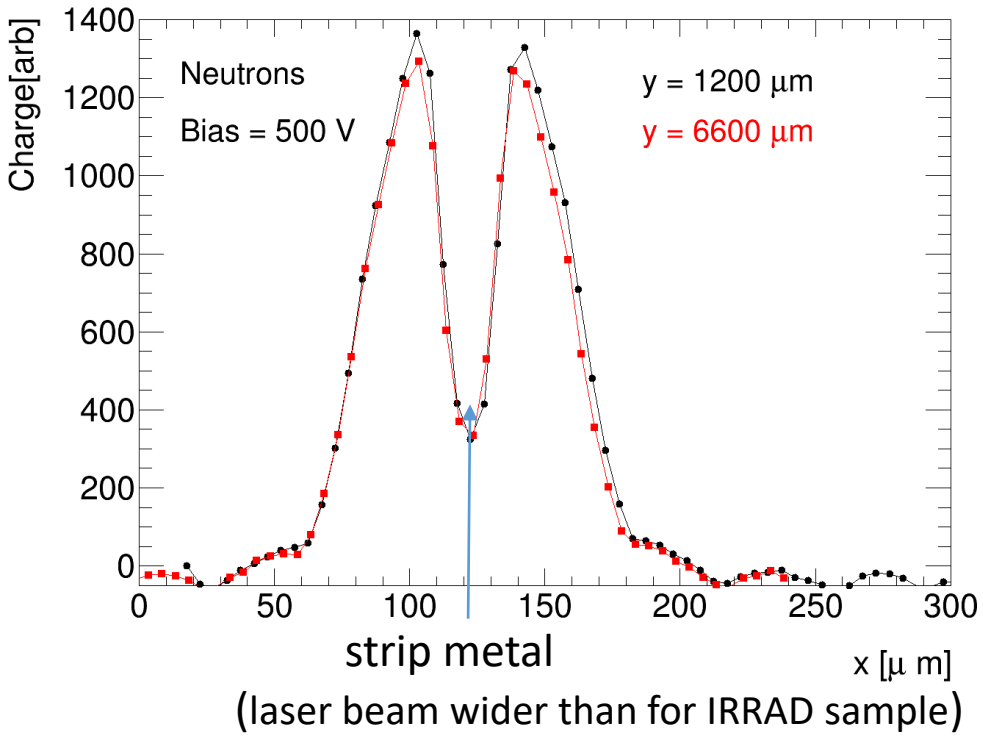


Collected charge more uniform along the strip than in IRRAD sample

Compare slices of collected charge along ***x*** at two different ***y*** *(*from 2D plots on previous slides)

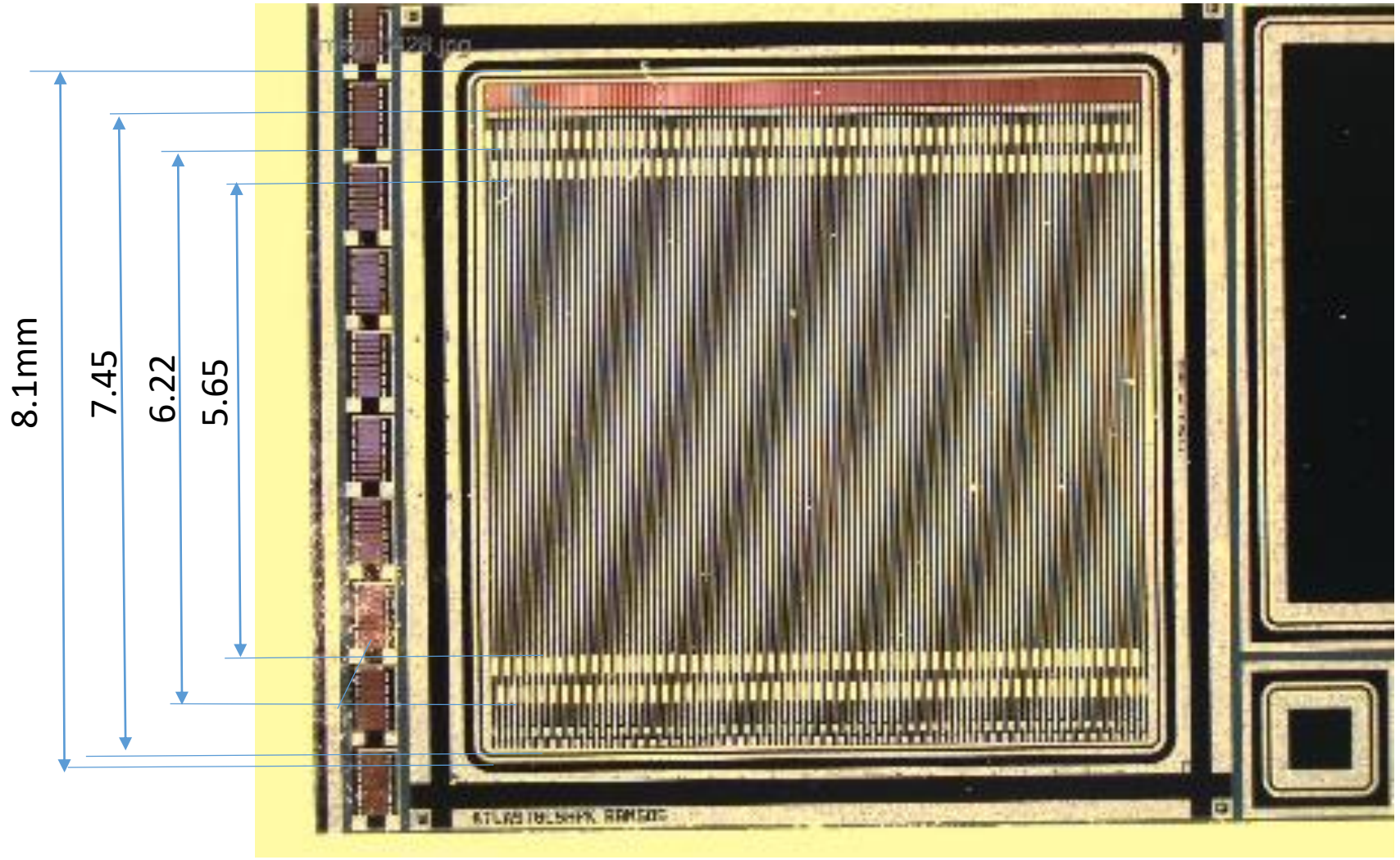
➔ protons: about 30 % difference between charge collected at low and high ***y***
➔ neutrons: no significant differences between measurements at two ***y***





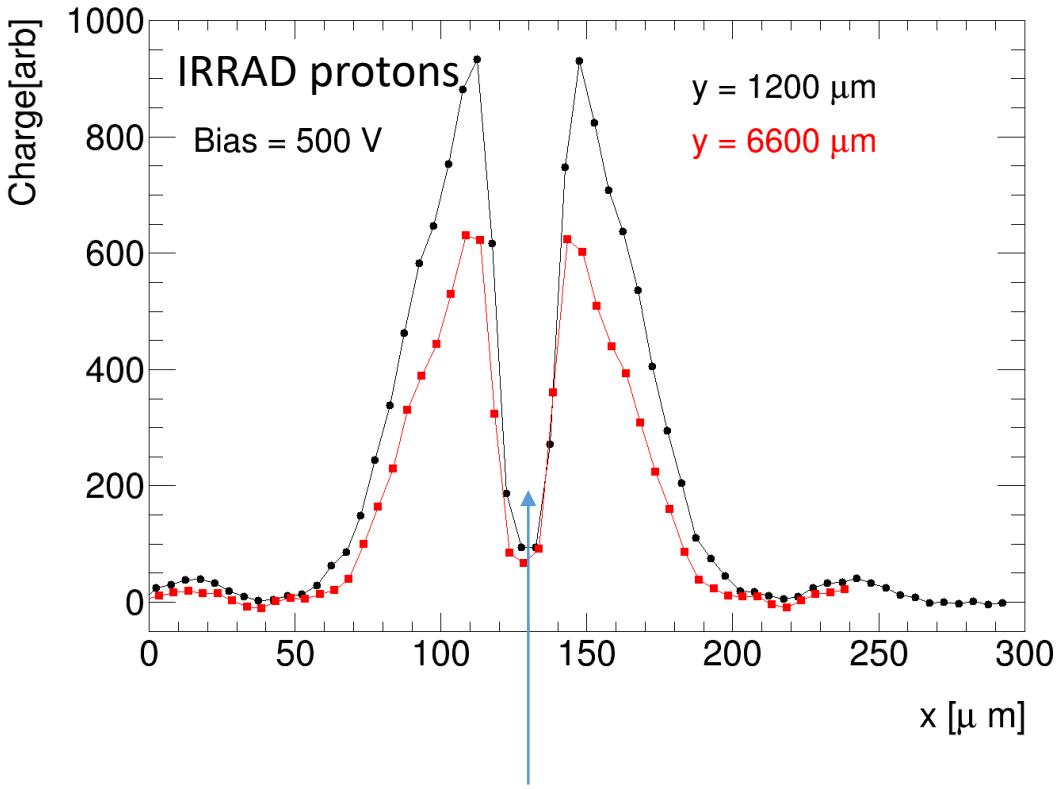
(laser beam wider than for IRRAD sample)

- plots scaled to same laser intensity → charges measured in two samples can be roughly compared
- charge measured with IRRAD sample between 50% and 70% of charge measured with neutron sample
  ➔ roughly consistent with Sr-90 measurements

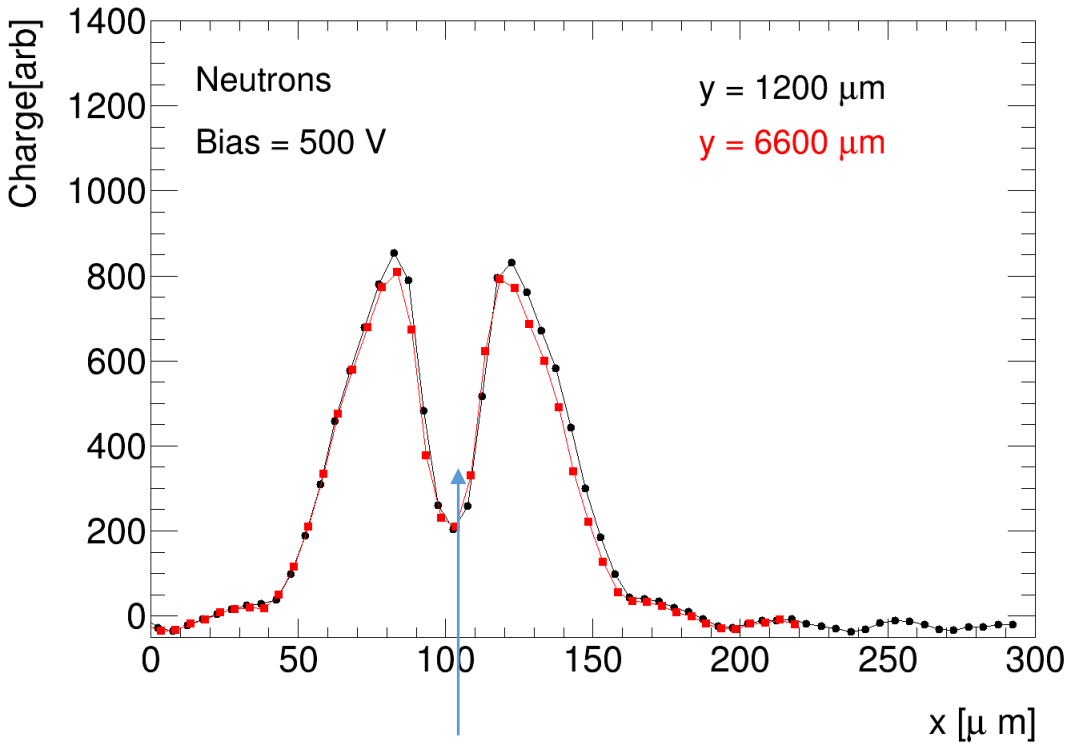

8.1mm
7.45
6.22
5.65

Compare slices of collected charge along ***x*** at two different ***y*** *(*from 2D plots on previous slides)

➔ protons: about 30 % difference between charge collected at low and high ***y***
➔ neutrons: no significant differences between measurements at two ***y***



strip metal



strip metal