TCT scans of two 2x2 APDs

Sofía Otero Ugobono
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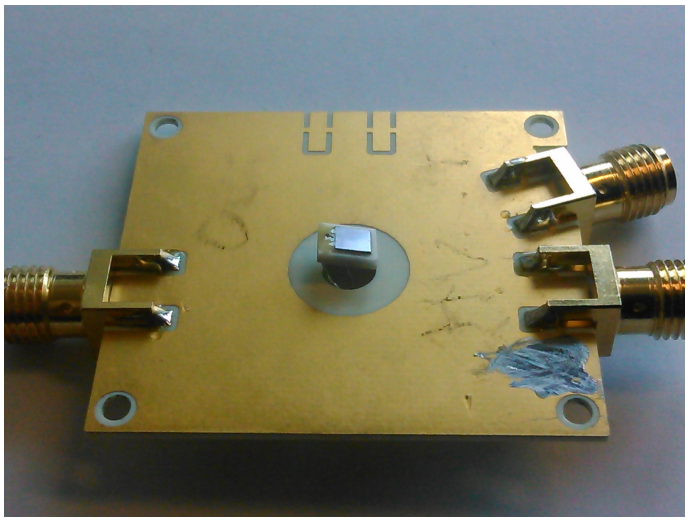
The samples

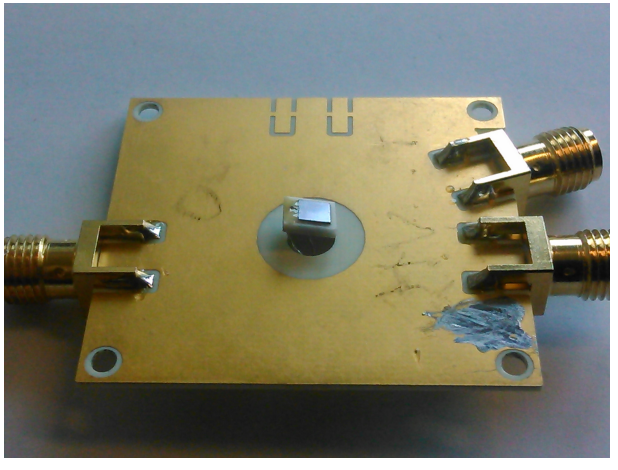
- Two 2x2 APDs were measured through TCT with the IR laser.
- The bias voltages used were
  - 1700 V
  - 1750 V
  - 1800 V
- Due to how it was connected, one of the samples is detached from the PCB

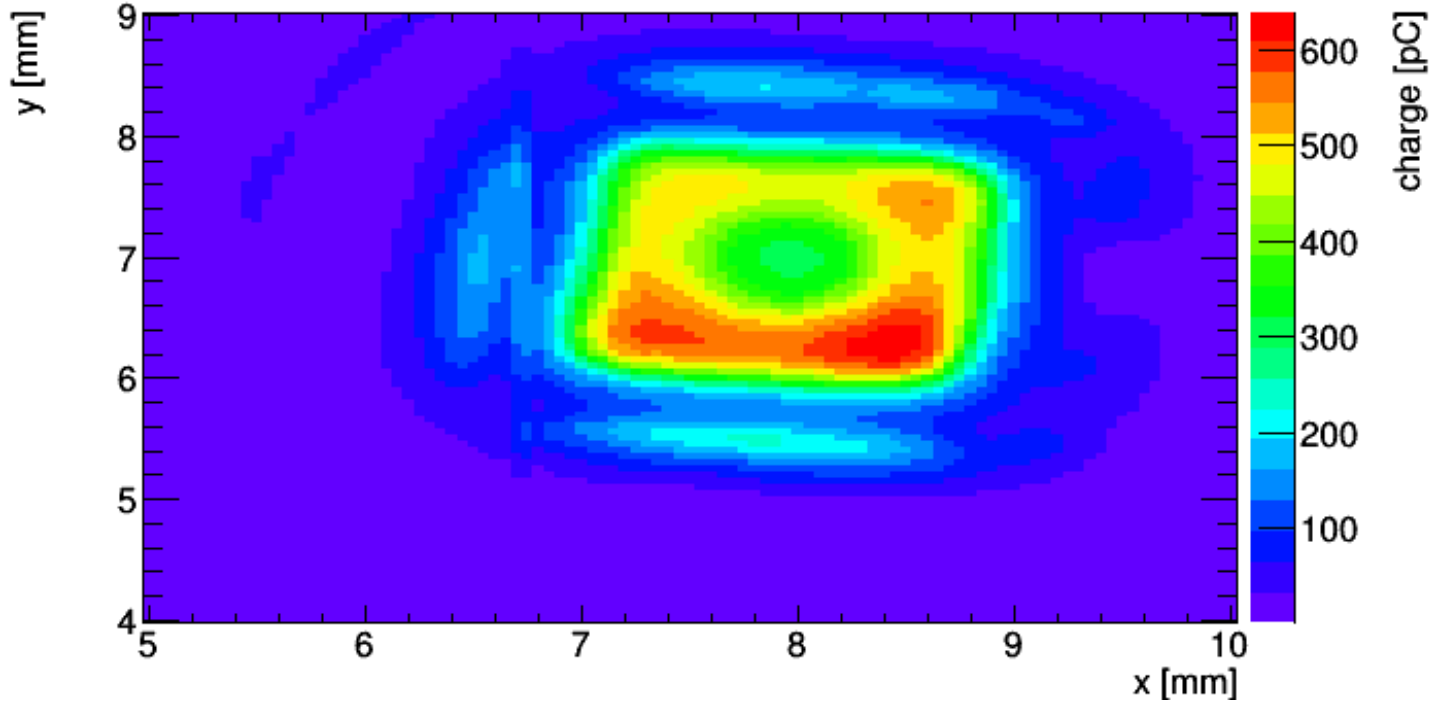
  (I will refer to it as “the detached sample”)



Results for the detached sample

- This plot was obtained at a bias voltage of 1700 V.
- The charge collection observed is inhomogeneous.
- Charge collection is observed in the surroundings.

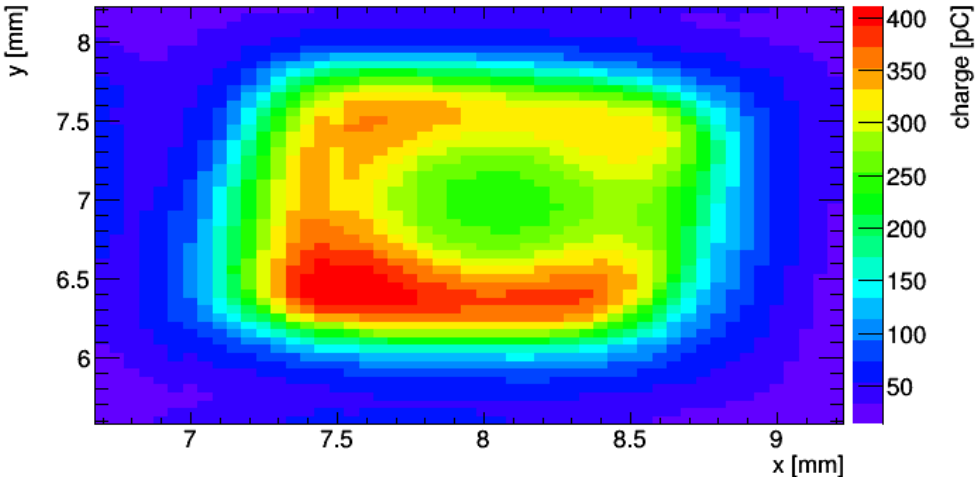




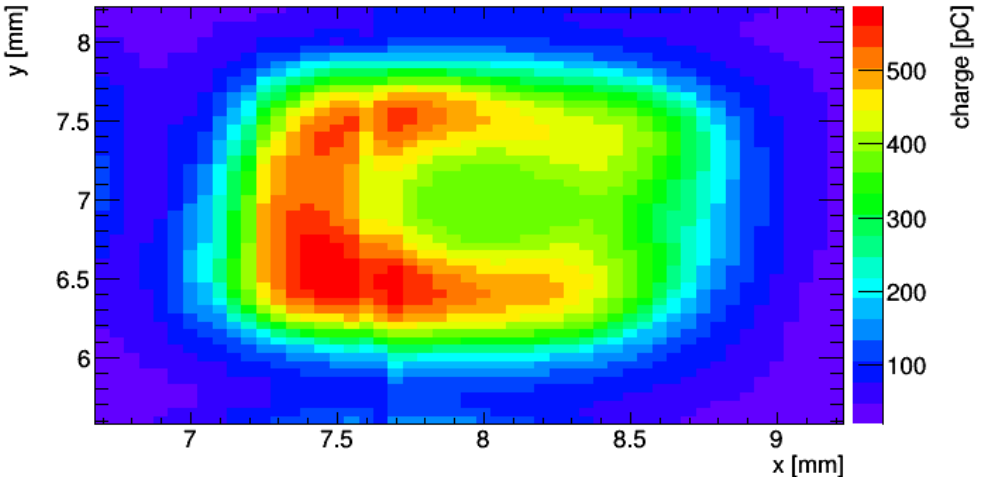
Results for the detached sample

- These are the plots obtained for the three bias voltages employed.
- The charge collection pattern changes with voltage.

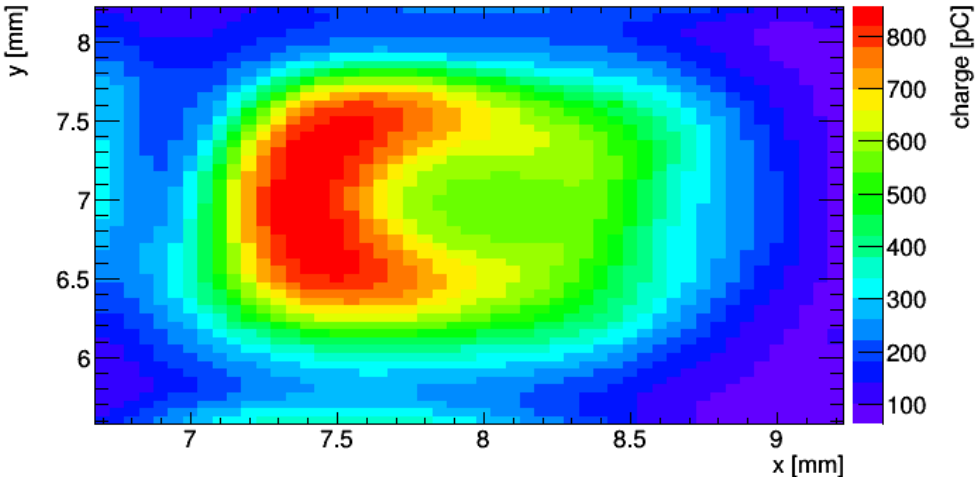
1700 V



1750 V



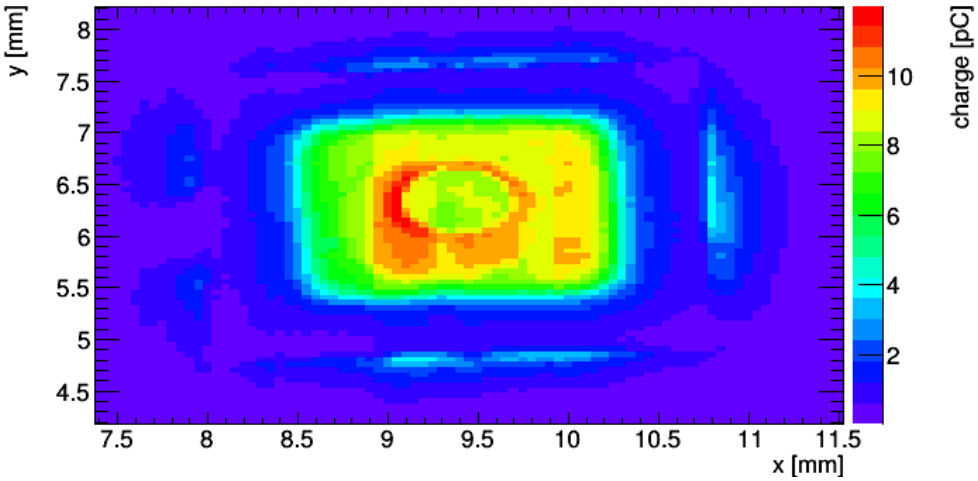
1800 V



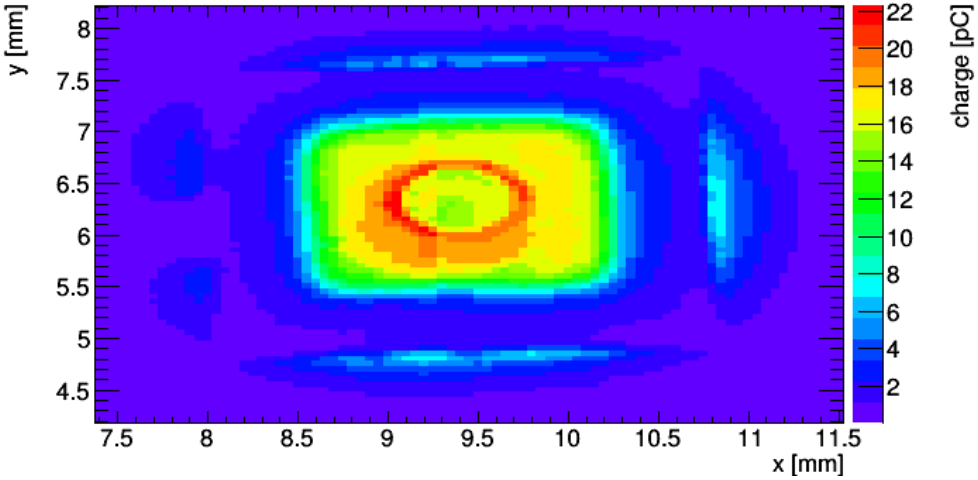
Results for the attached sample

- These are the plots obtained for two bias voltages: 1700 V and 1750 V.
- The charge collection pattern changes with voltage.
- Charge collection is observed in the surroundings.
- Charge collection in this sample is significantly lower than in the detached one.
- The 1800 V could not be performed due to an incident with the HV generator.

1700 V



1750 V



Conclusions

- Both sensors
  - present an inhomogeneous charge collection,
  - have a collection pattern that changes with voltage,
  - collect charge in unexpected areas surrounding the main part of the sensor in question.
- The detached sample
  - has a charge collection pattern that experiences a greater change with voltage,
  - collects a lot more charge than the attached sensor.