I/V and C/V Measurements

of Hamamatsu Si-Detectors

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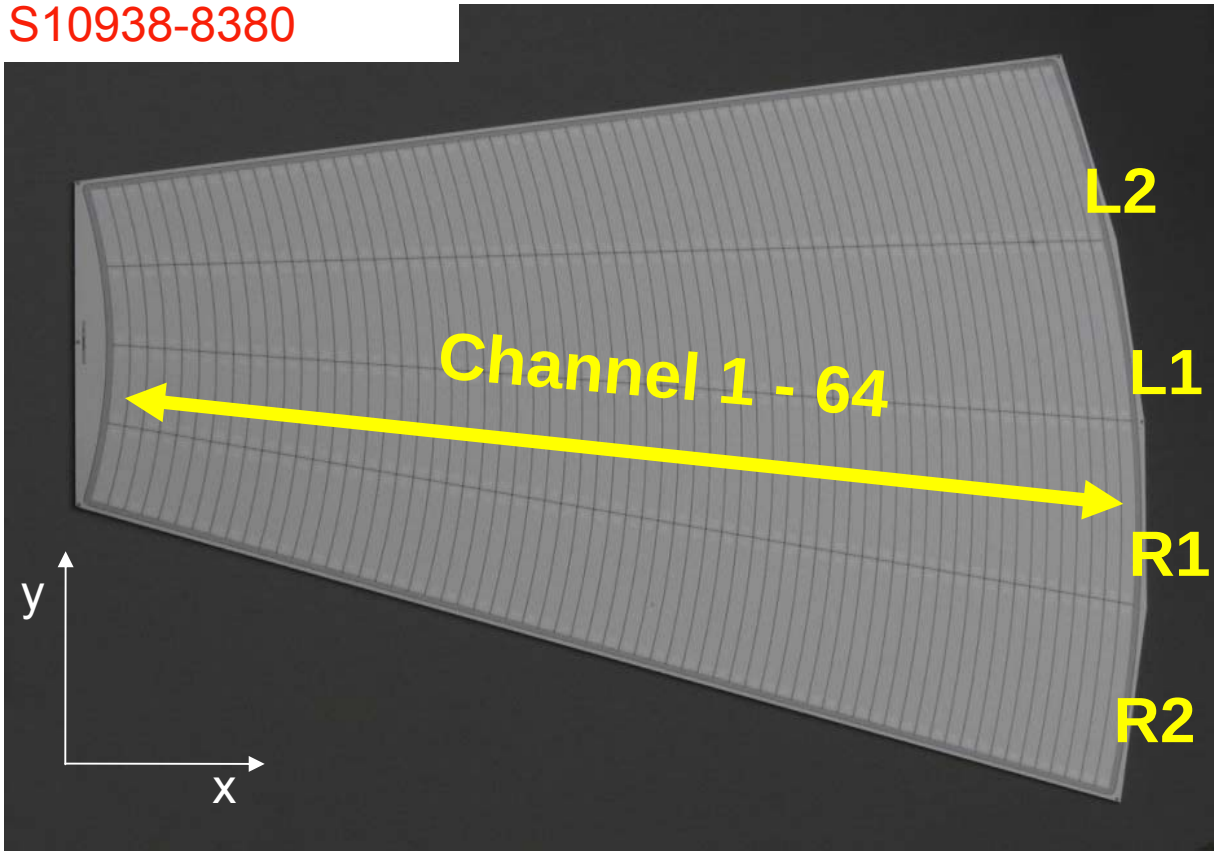
On behalf of DESY Zeuthen group

Detector description

Hamamatsu

S10938-8380



"Cracow-Design"

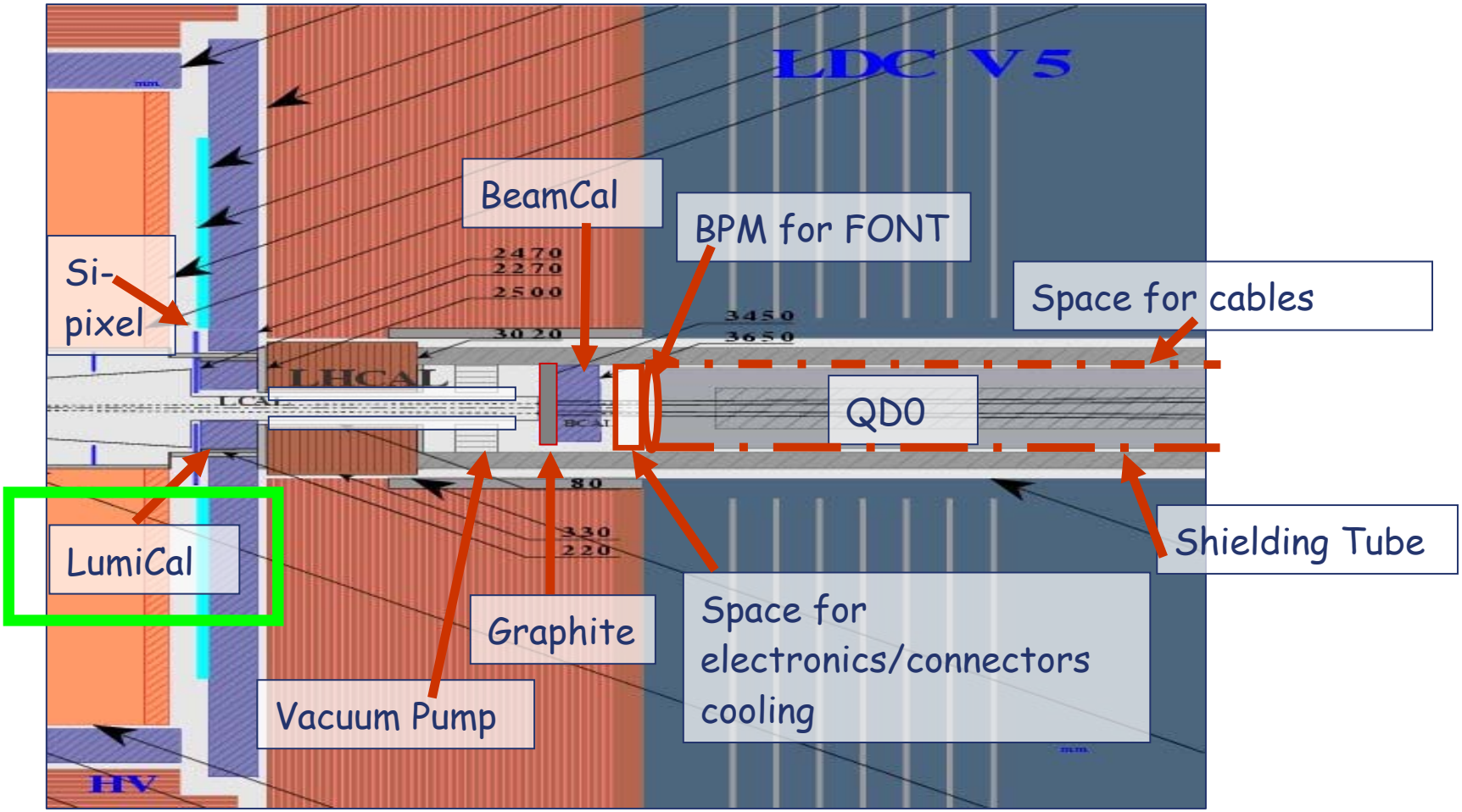
- High resistivity n-type Si
- 1,7mm p+ - strips
  with an Al-metallization
- Backplane: n+ implant
  and an Al-metallization
- 3 Guard rings

x-Size = 10,8cm

y-Size = 4…12cm

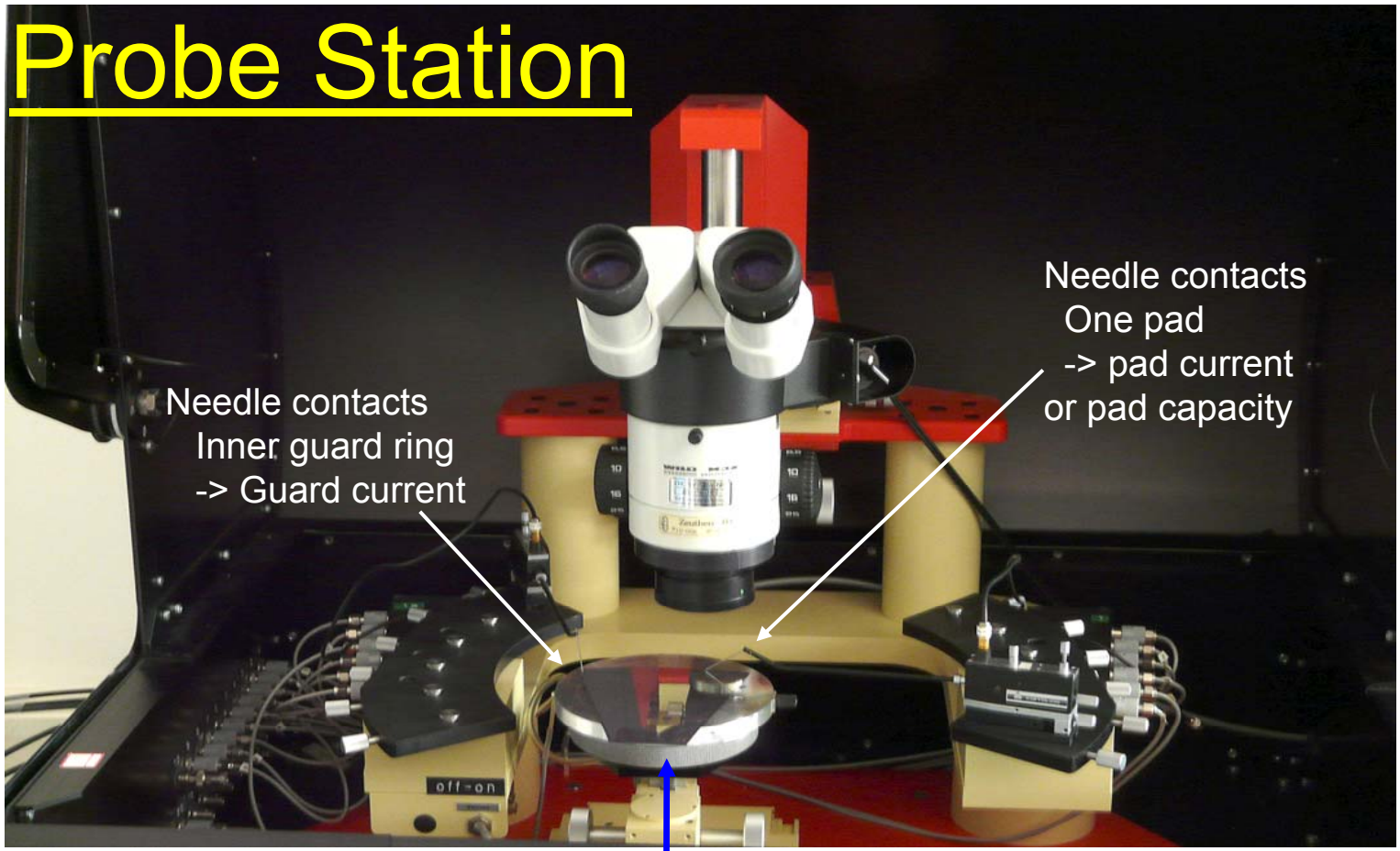
(6 Inch Wafers)

Introduction

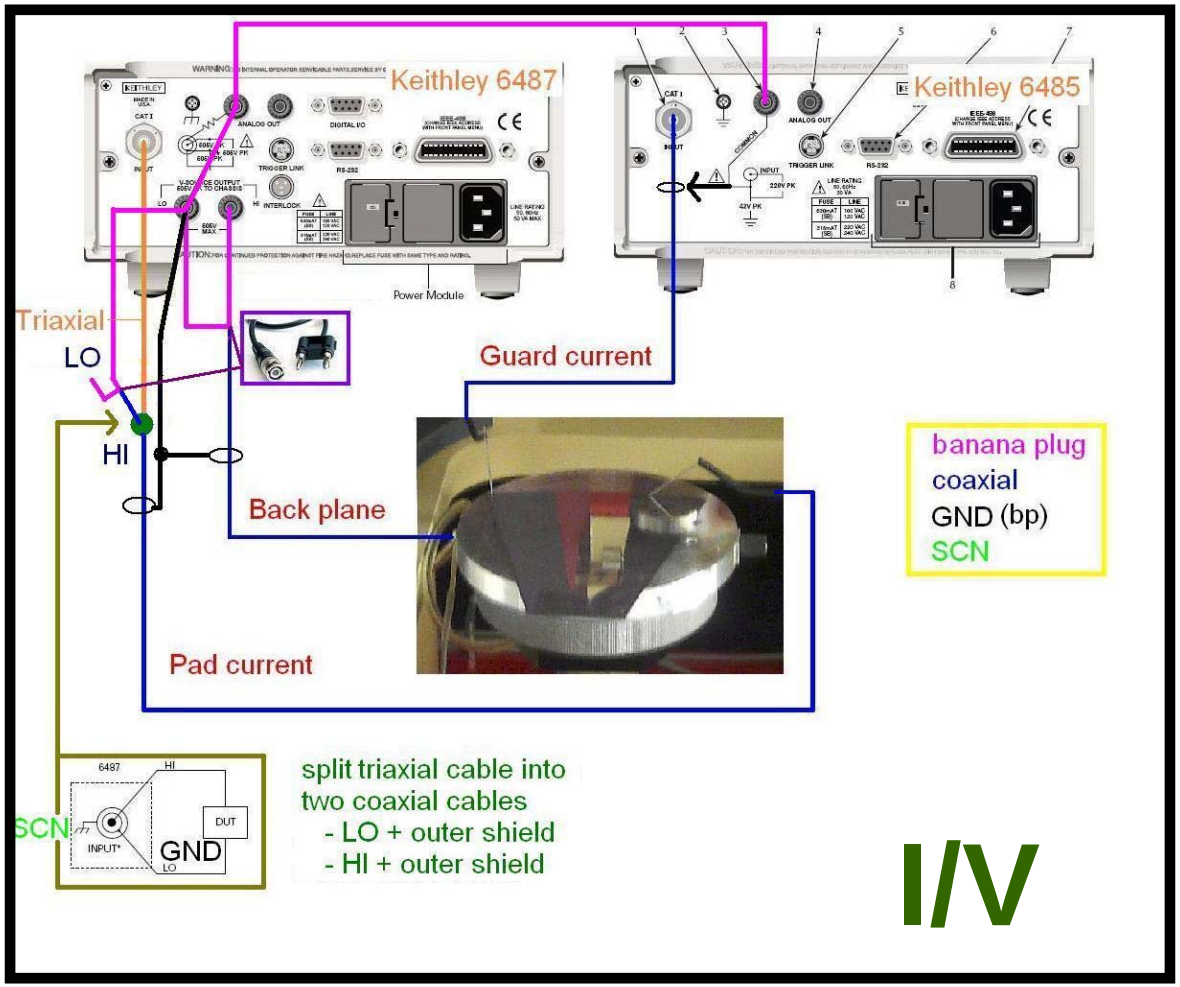


Measurement setup

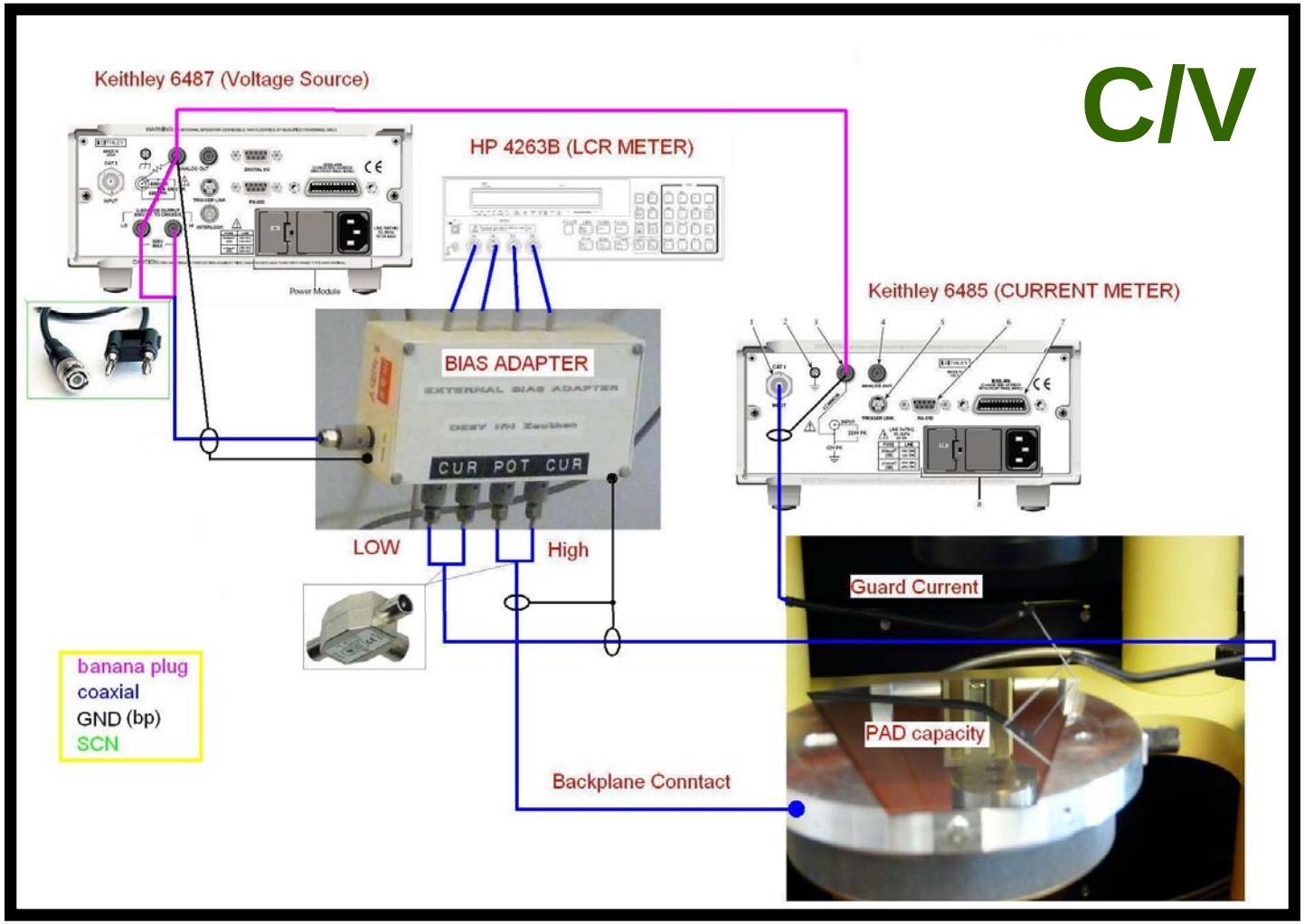
Measurement setup 1



Measurement setup 3



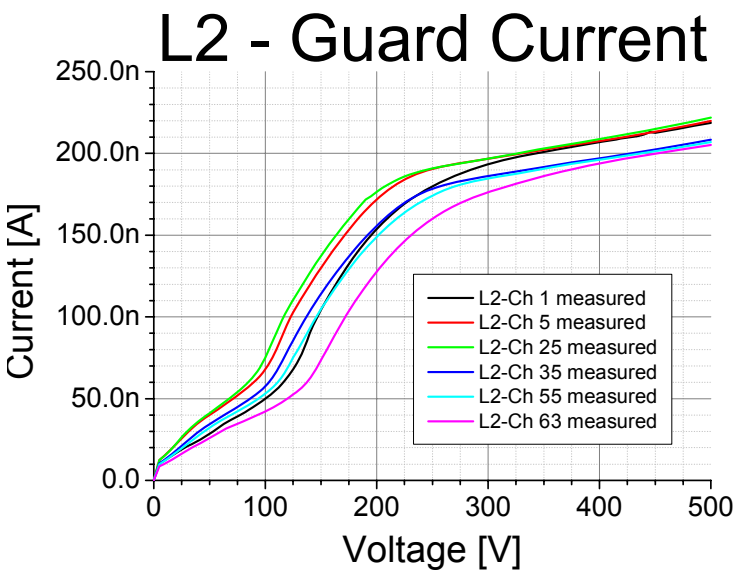
Measurement setup 2

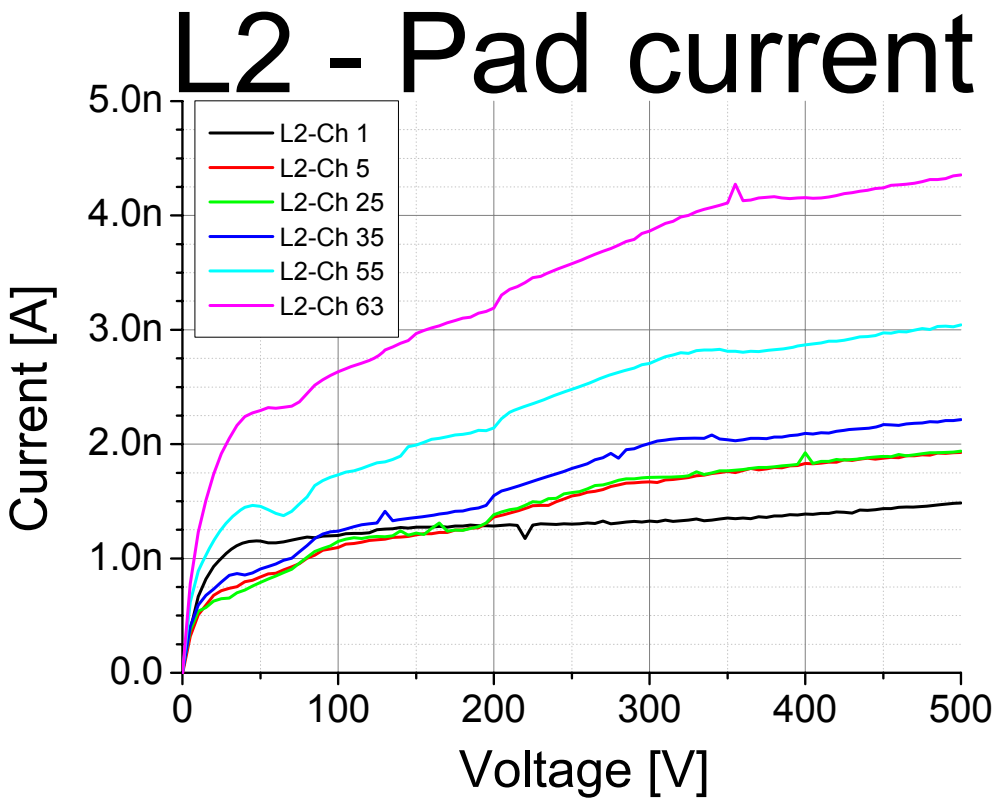


Results

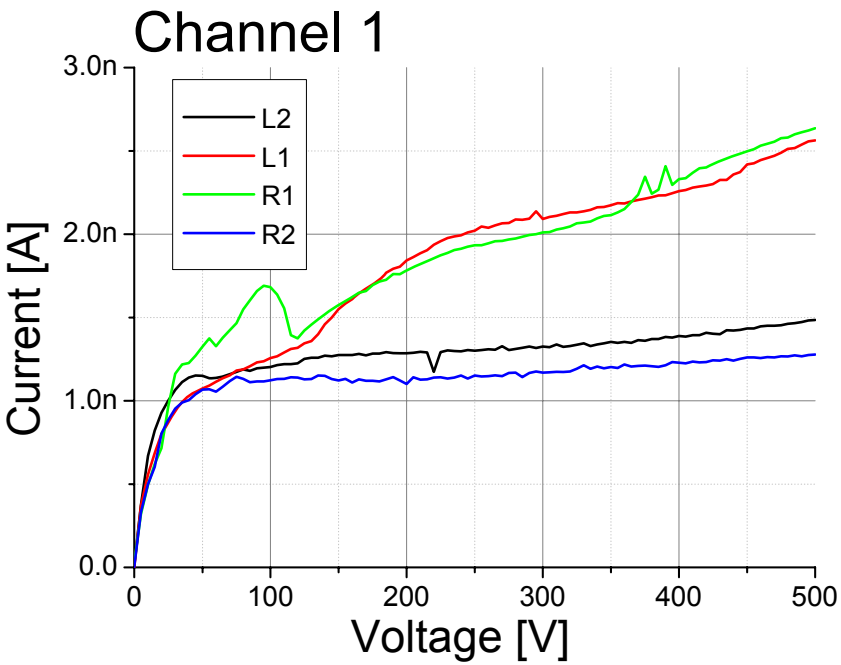
Measurement results 1

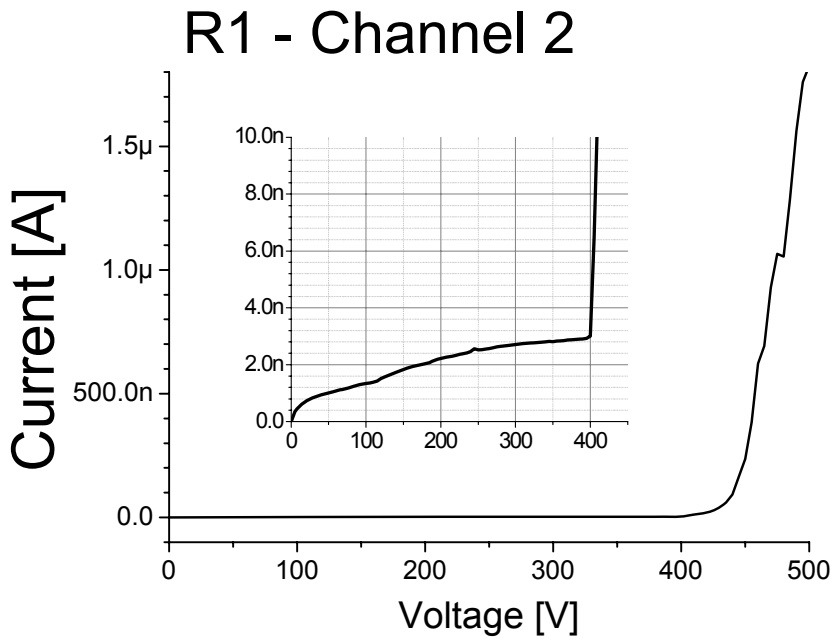
- *Inner guard ring connected to current meter*
- *Only a single pad was connected*





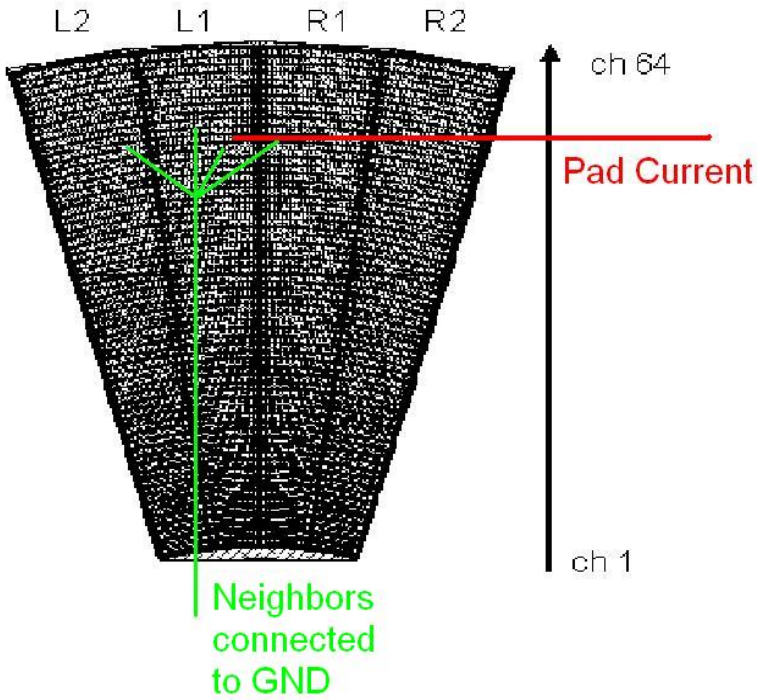
Measurement results 2

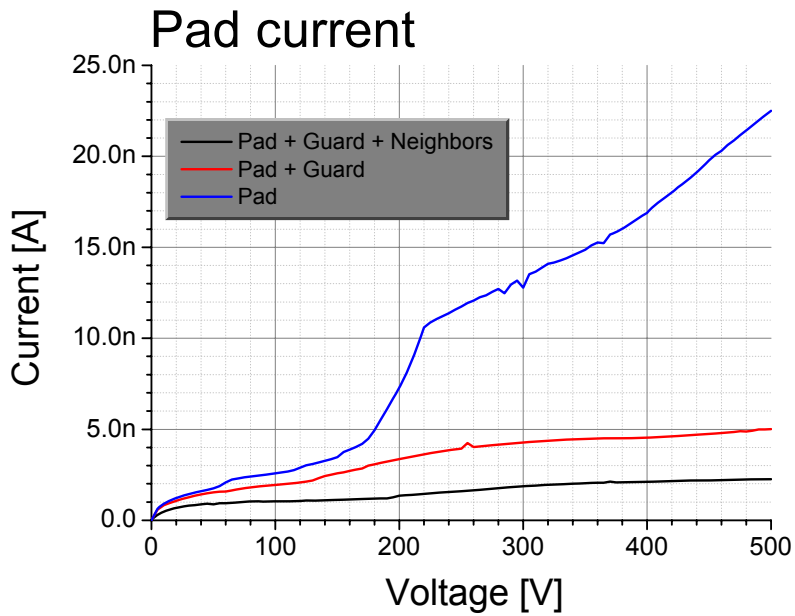


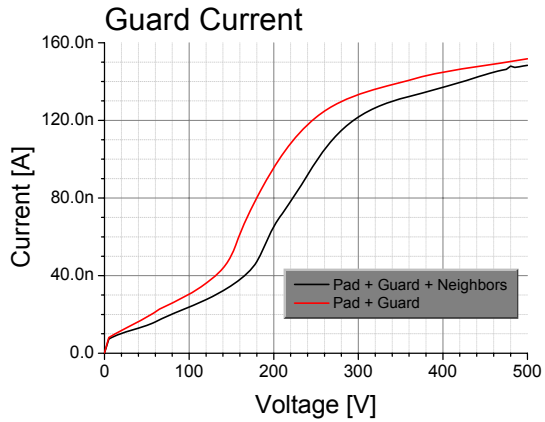


example of 1 pad with break through

Measurement results 3

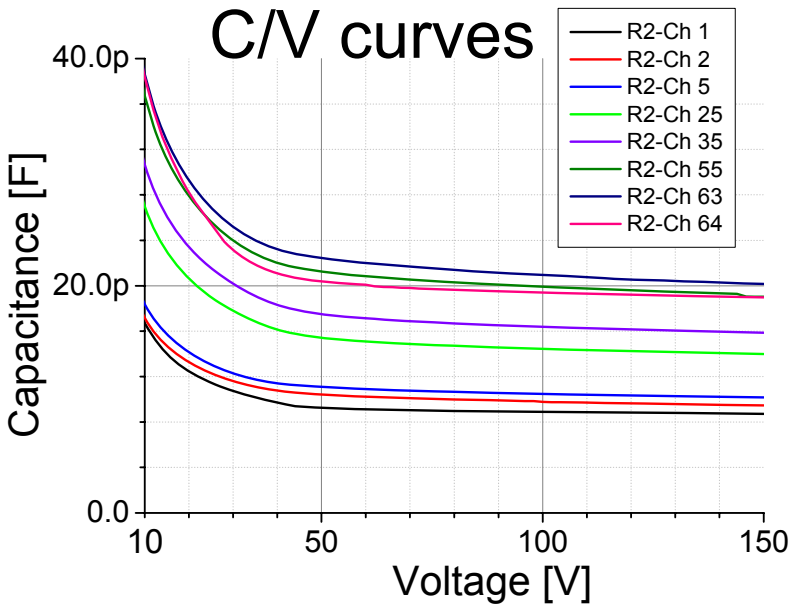


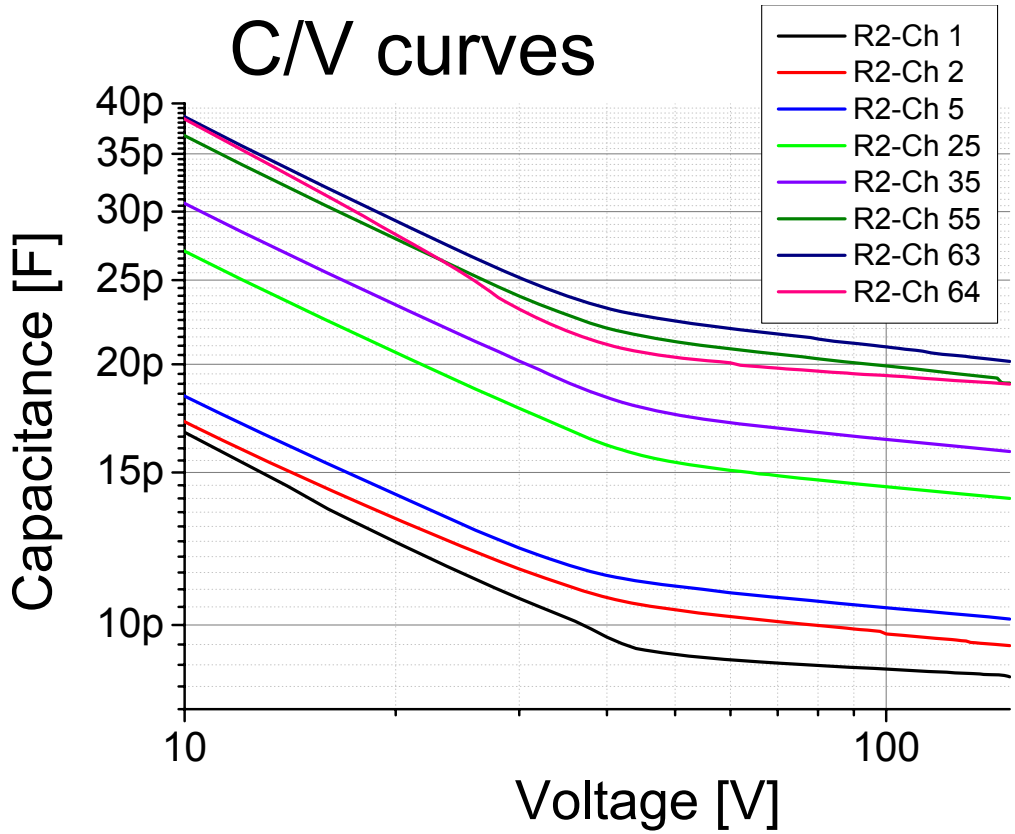




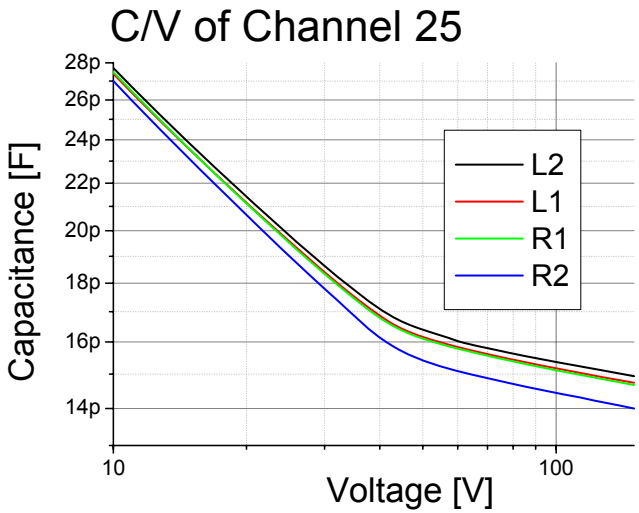
Start to study the influence of neighbors

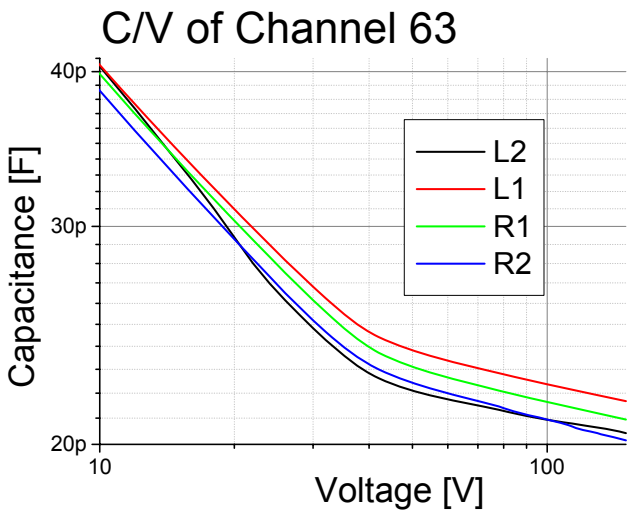
Measurement results 4

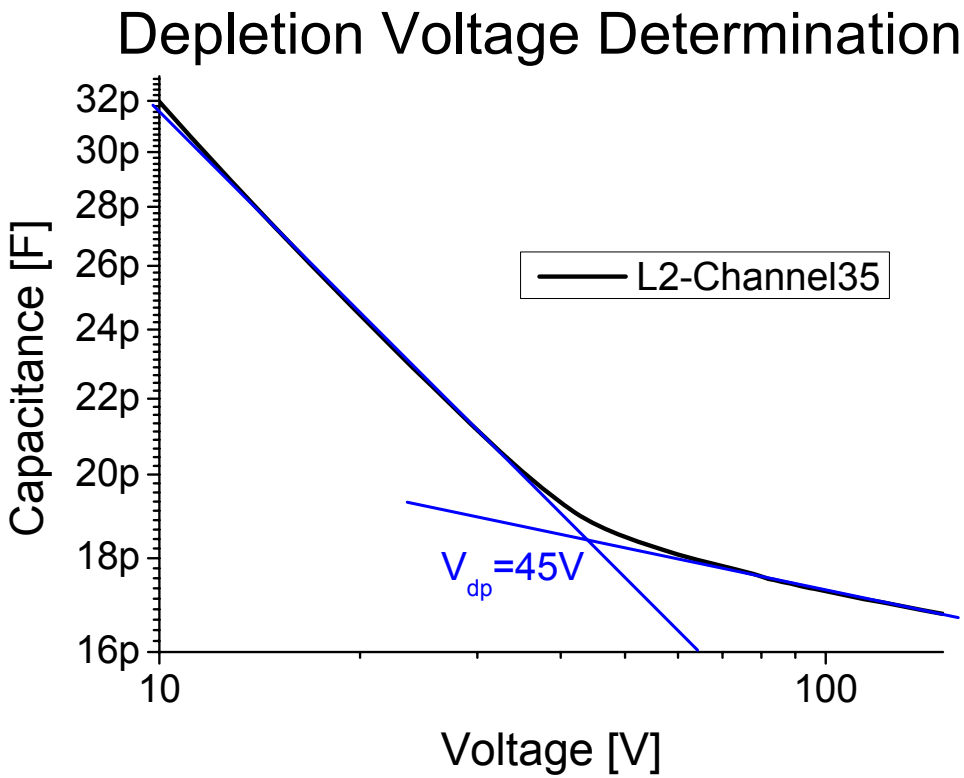




Measurement results 5







Conclusion and Outlook

- First results show that the detectors have a low leakage current (<5nA @ 500V) and a depletion voltage at about 50V
- The pads are homogeneous (2 of 35 have a break through by a voltage higher than 400V)
- The measurements of all detectors will continue in July

Thank you for your attention