Characterisation of low gain avalanche detectors for particle physics and synchrotron applications developed at Micron Semiconductor.

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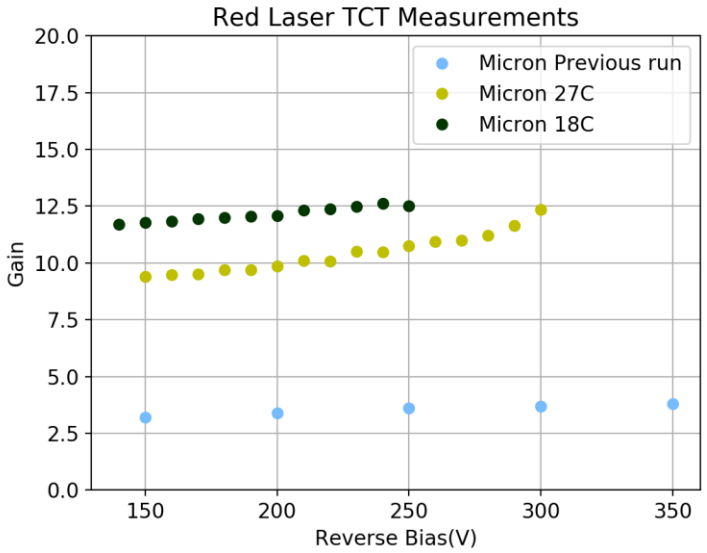
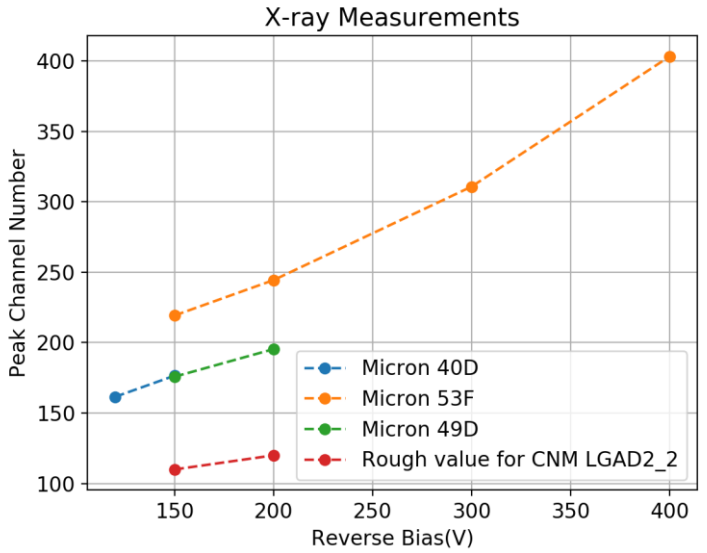
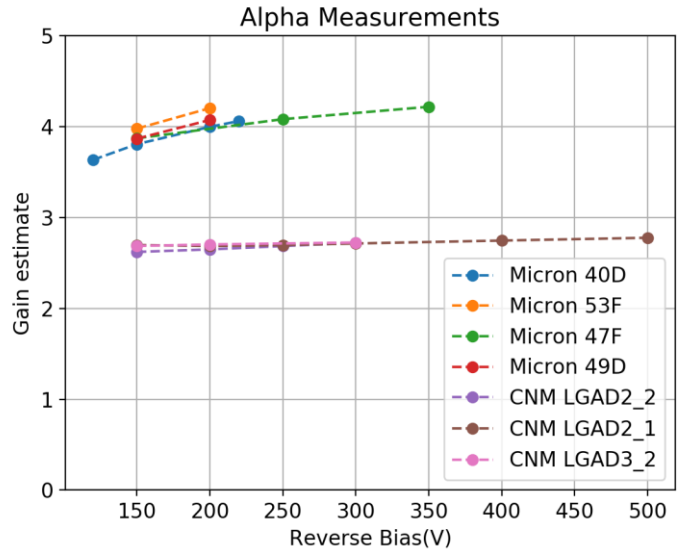
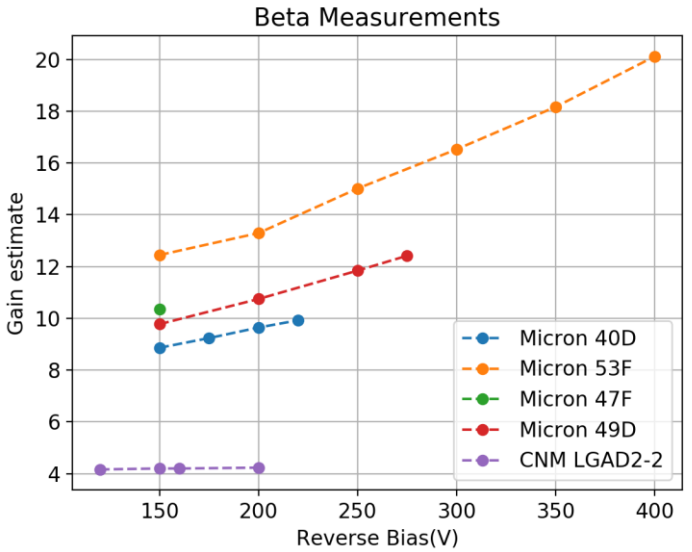
Conclusion of recent LGAD Measurements fabricated at Micron Semiconductor.









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diamond

MICRON SEMICONDUCTOR LIMITED

- Glasgow University in collaboration with Micron set to produce LGAD's.
- We had several fabrication runs.
- Results from latest two runs are summarized here.
- Comparison of gain measurements using varying radiation sources at CNM.
- X-ray measurements with 22keV Cd-109 source.
- Breakdown voltage > 300V for most devices.
- Latest run shows gain in range 9-12(TCT).
- A factor of 3-5 greater than previous run.
- Gain from alpha lower than TCT and Beta due to plasma effects.
- This effect is seen for both Micron and CNM devices.

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New Mask Design

- We are in the process of designing a new mask with a range of LGAD designs.
- This includes varying pixel arrays, strips and pad detectors.
- Main motivation is in the area of low energy X-ray detection with 300um thick sensors.
- We would like to make ultra-fast devices for applications at the HL-LHC.
- To enable this an additional production of 50um thick wafers is required.
- We would like to propose a joint RD50 project for an ultra-fast LGAD fabrication at Micron and are looking for collaborators.
- In addition we would like advice on any ATLAS/CMS specific device designs

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