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Mlr1 CML test chip irradiation studies.

Comparison of results using X-ray sets at CERN and Daresubury

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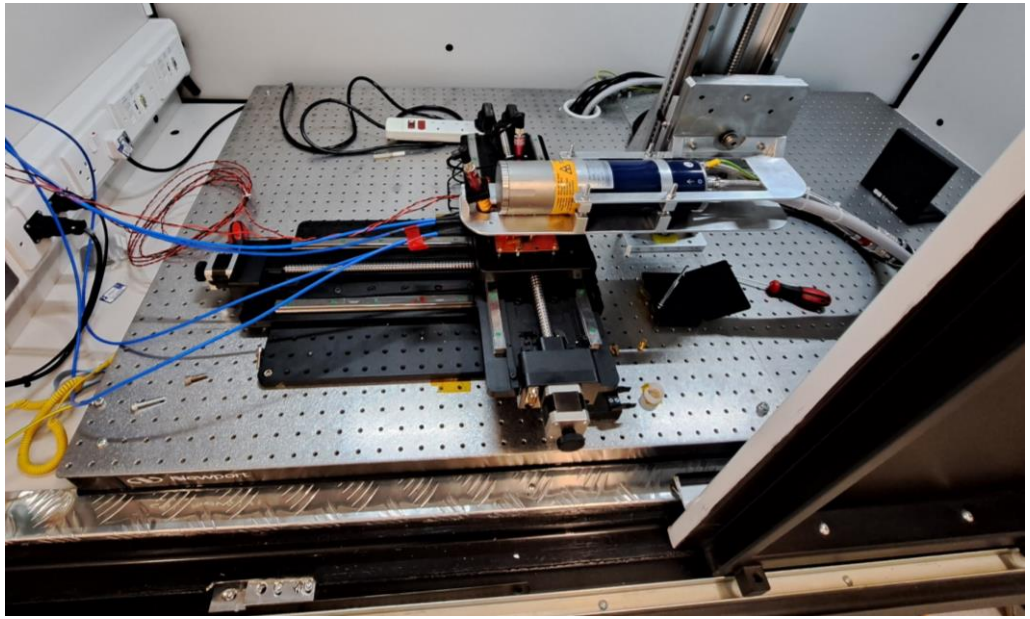
Test setup at Daresbury Lab.



DUT in X-ray set at DL

- Test signal supplied by KCU105.
- 2 Gbits/s fast clock pattern.
- Measured using MSO64B DSO.
- Data taking automated using Python
- VDD1V2=1.2V
- VDD2V5=2.5V
- 3 devices irradiated at CERN and 3 at Daresbury using these settings.

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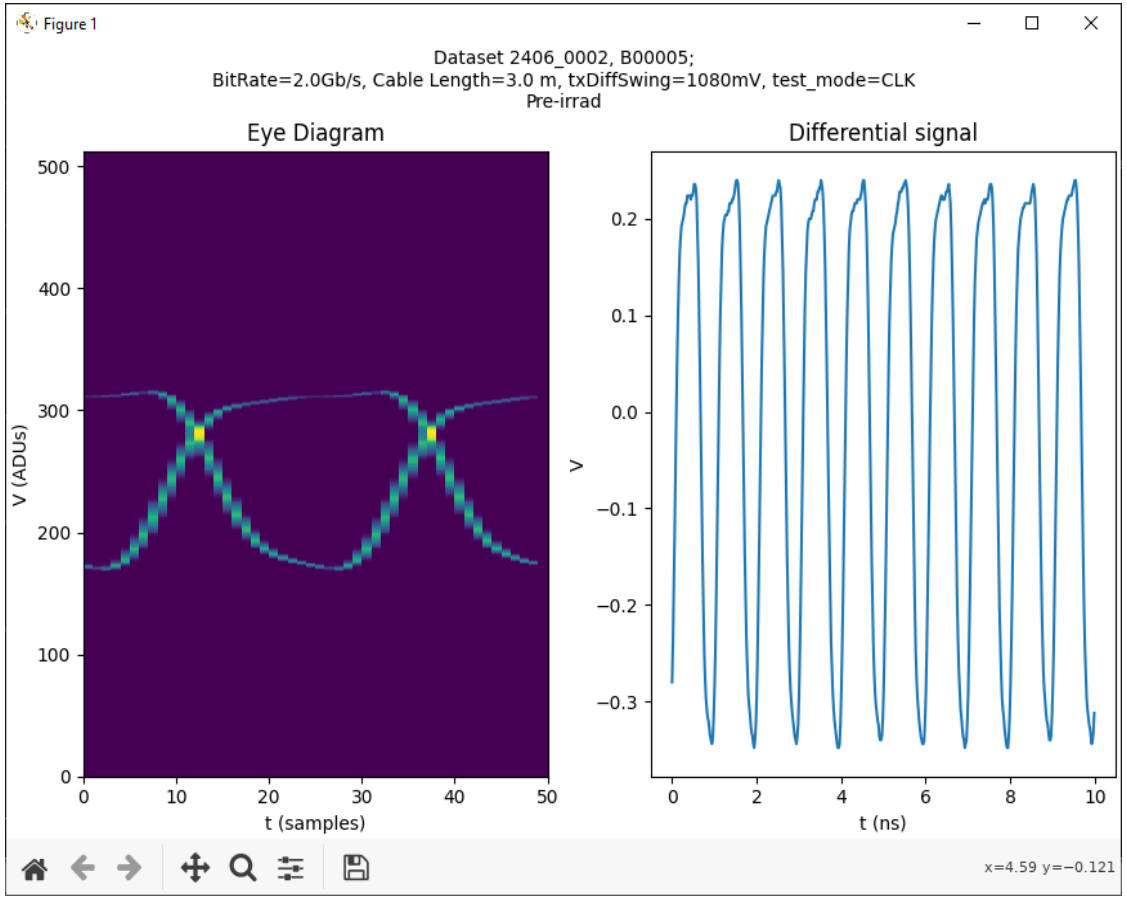
B00005 pre-irradiation



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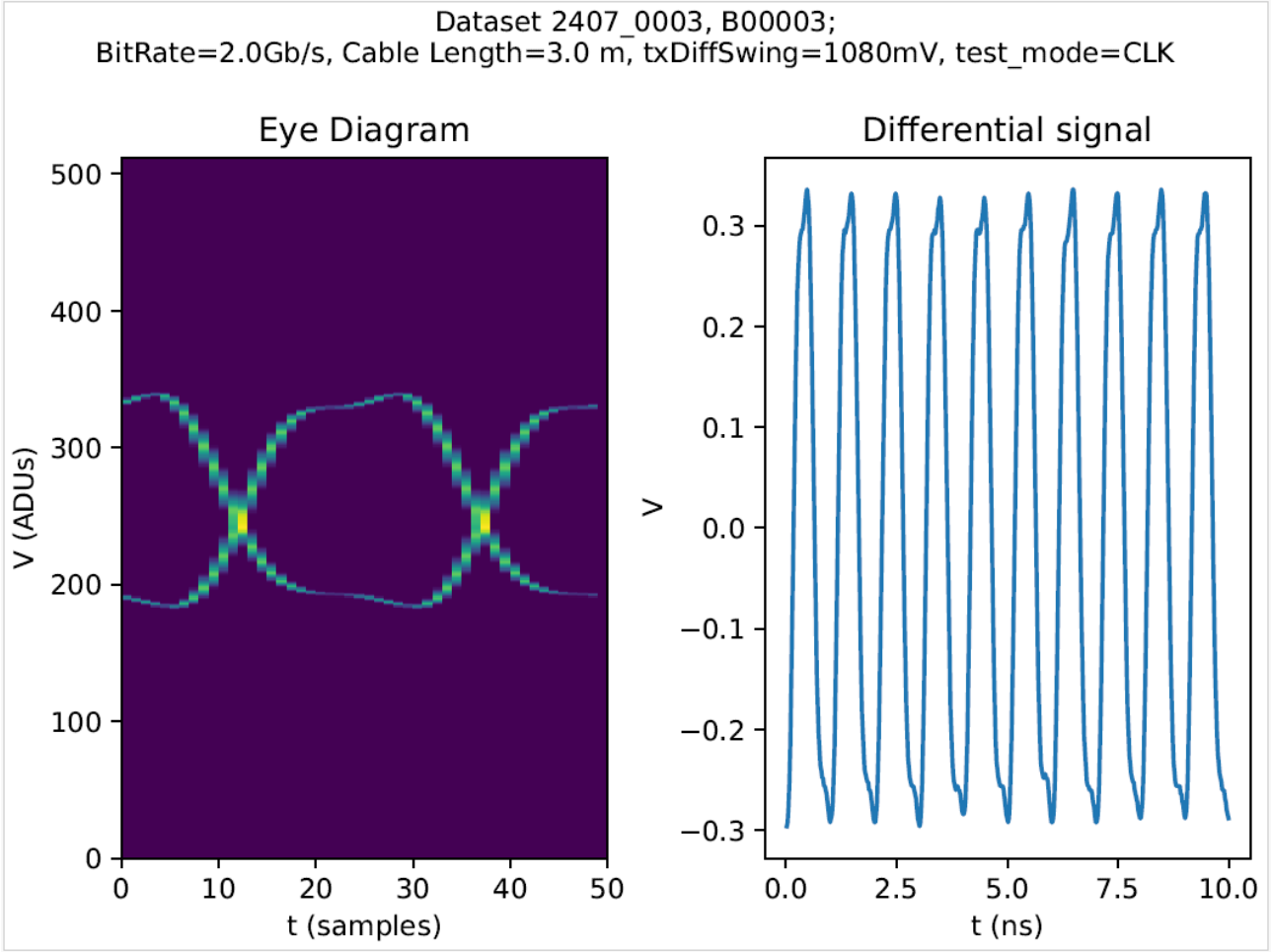
Eye Diagram B00003

- Eye diagram from B00003
- Note more symmetric mark/space ratio pre-irradiation.



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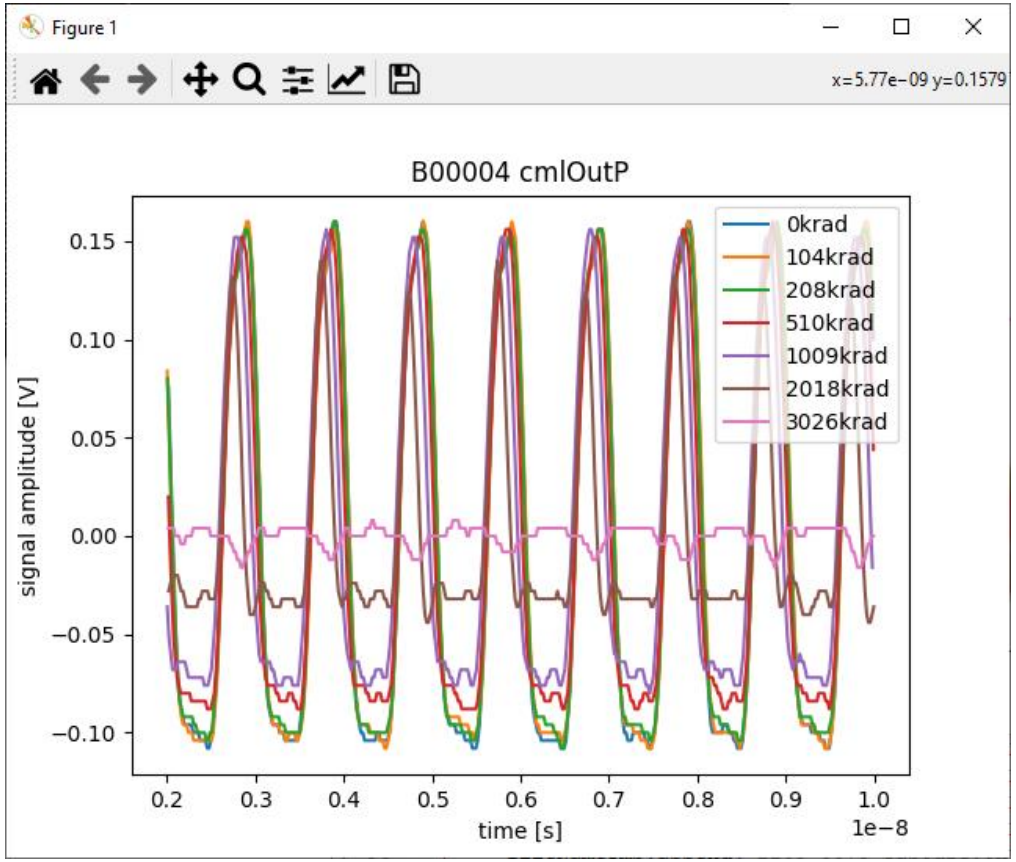
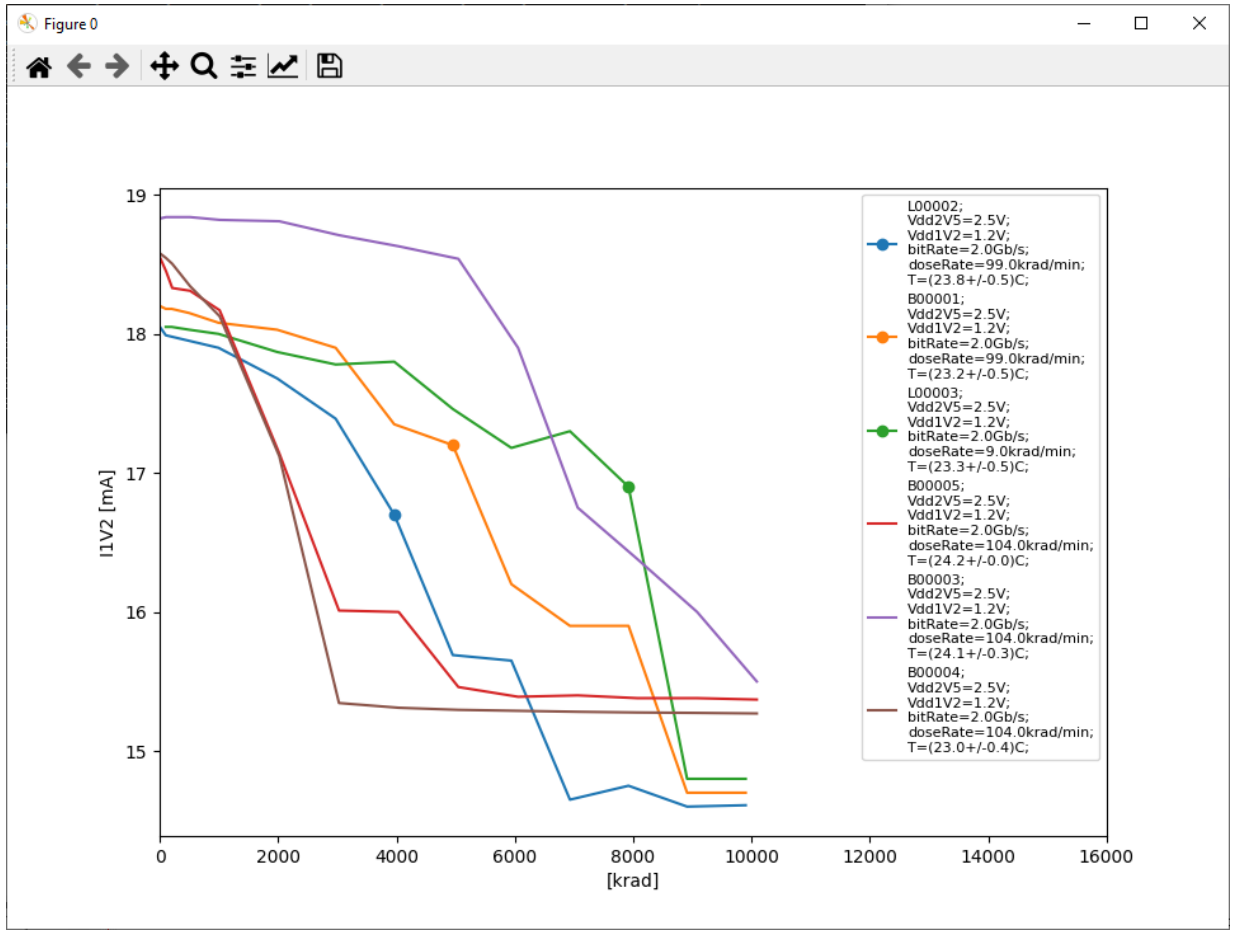
Degradation of output with irradiation





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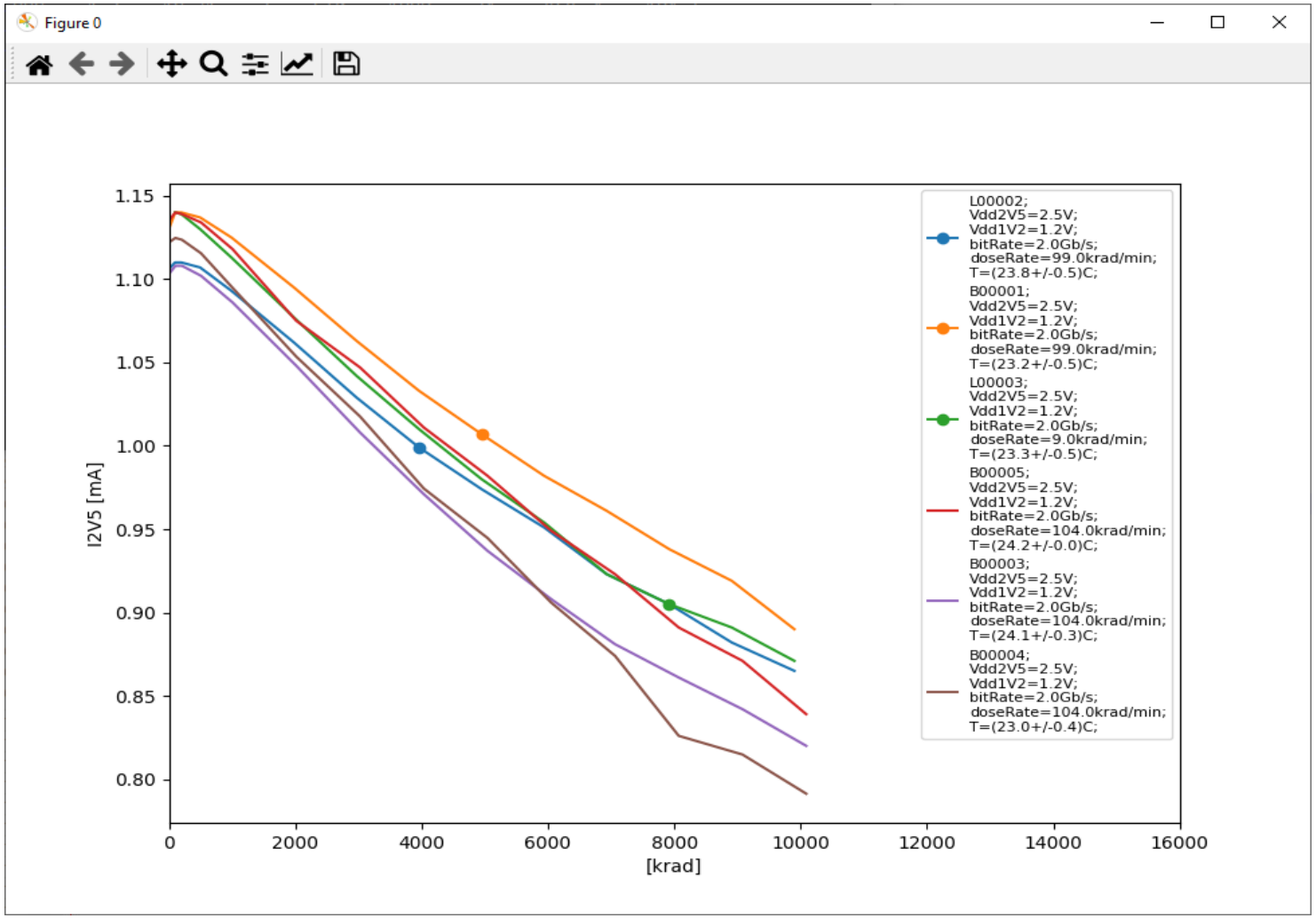
Current from 2V5 rail

- Data from devices irradiated at CERN are shown with circular markers (L00002, B00001 & L00003)
- Devices irradiated at Daresbury are B00005, B00003 & B00004 – no markers.



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Conclusions

- Variation dose tolerated before device stops working seems to be from part to part spread.
- Decrease in current drawn from VDD2V5 with dose seems similar between different devices.
- This data appears reproducible between irradiations at CERN and Daresbury Laboratory.