Comments for referee of the paper “Charge Injection Devices” by Jaakko Härkönen et al.

Many thanks for revising our paper. Errors like tautology between the chapters are sometimes difficult to detect. I would like to shortly answer to some of your questions.

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2. A comment on any (if any) practical difficulties encountered in operating at
-50C would be welcome e.g. due to different thermal expansion of materials used.
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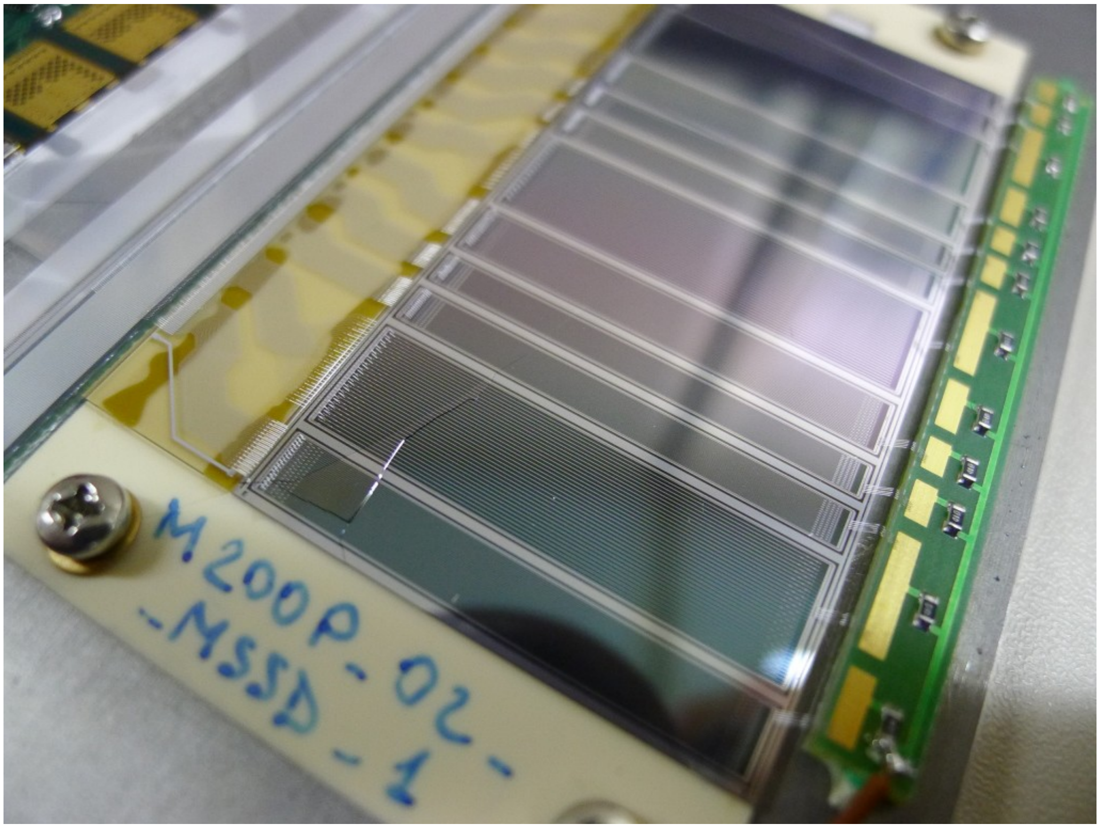
It is natural that thermal expansion might cause mechanical problems. In our test beams, such failures have actually never happened with CID modules cooled down to -50^0 C. One reason can be that in our setup, we place the sensor on support, which is PCB material:

Mechanical failure has been seen in a sensor module with ceramic support, as shown:



This cracked sensor module is not a CID and the crack is (most likely) occurred when the irradiated module has been taken out -20^0 C freezer.

Another possible thermal problem might occur with readout circuits. There is a feature that the APV25 ROC might stop working at the temperature below -25^{0}C. Some clock signal vanishes and ROC stops working. This can be fixed by sourcing APV25 by external clock signal. With our test beam setup, we use an additional trick, we place small heating resistor (and thermocouple) below ROC's. Thus, during the data taking, the APV's are at -20^{0}C and sensor is at -50^{0}C.

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3.p8 related to fig. 4
What are these telescope planes that give 40 ADC counts - assume 300um
unirradiated reverse biased ?
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Reference planes of the SiBT telescope are Hamamatsu made strip sensors, originally designed for upgrade of Tevatron's D0 experiment. The value 40 ADC is average of thousands of events seen in 8-10 reference planes. The nominal thickness of reference sensor is 320µm as HPK usually express the Si wafer thickness, but many things (e.g. capacitance) indicate that the effective thickness is very close to 300µm.