Test-beam plans for LumiCal

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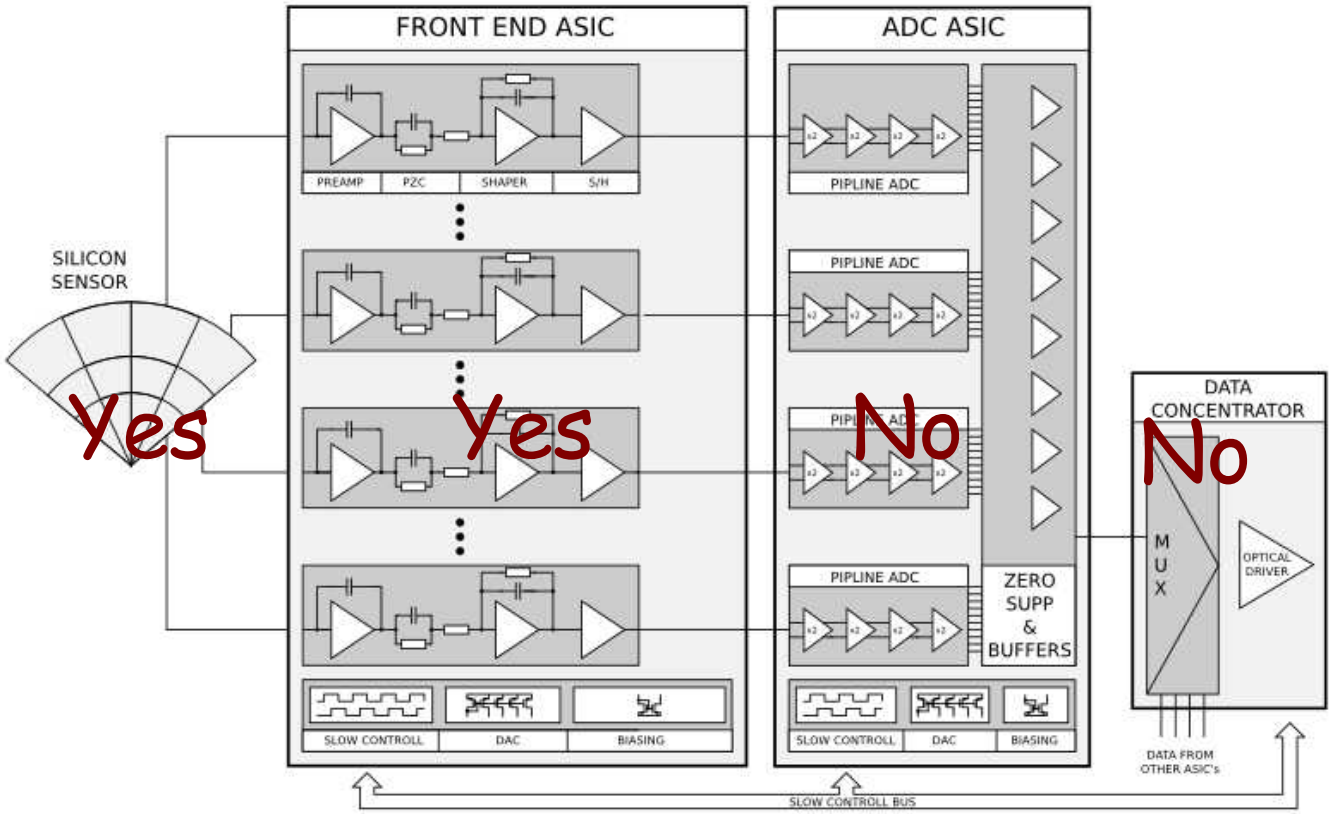
What do we have for testbeam setup ?

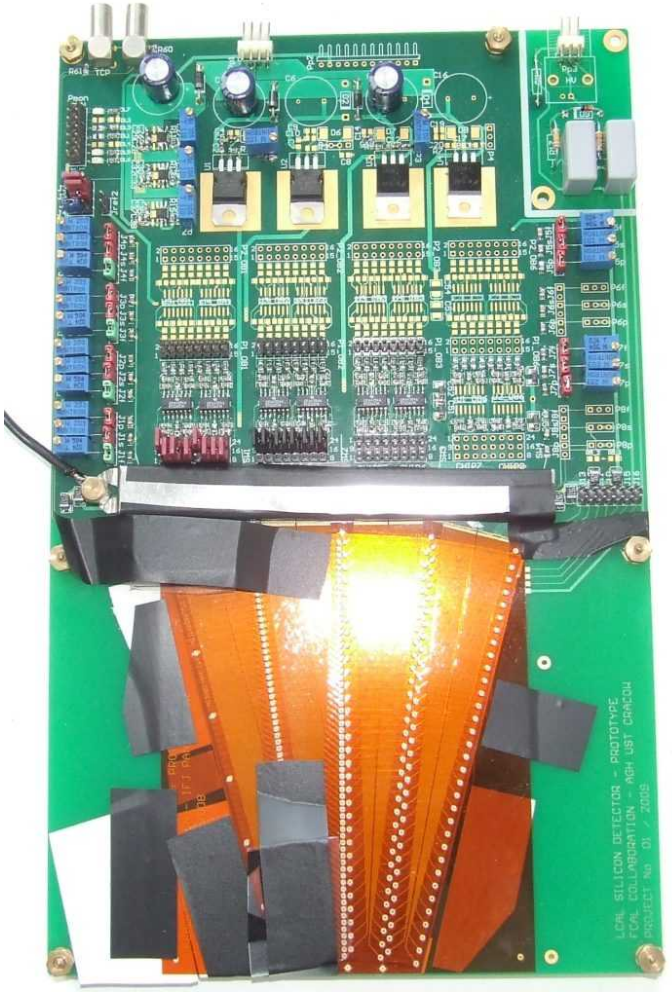
- Sensors from Hammamatsu
- Kapton cable fanout
- Prototypes of 8 channel front-end in AMS 0.35 µm
- PCB



From AGH-UST Szymon and Jonathan will participate

Present Setup: what can we do ?

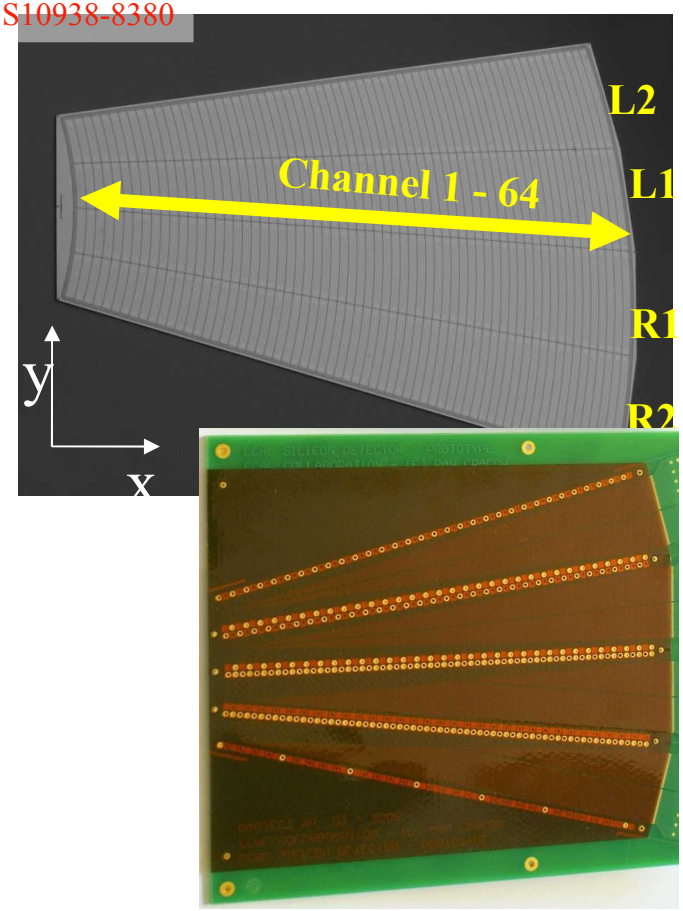
- PCB board with biasing circuitry
- Silicon sensor with fanout
- 5 front-end ASICs bonded
- External ADCs and the rest...

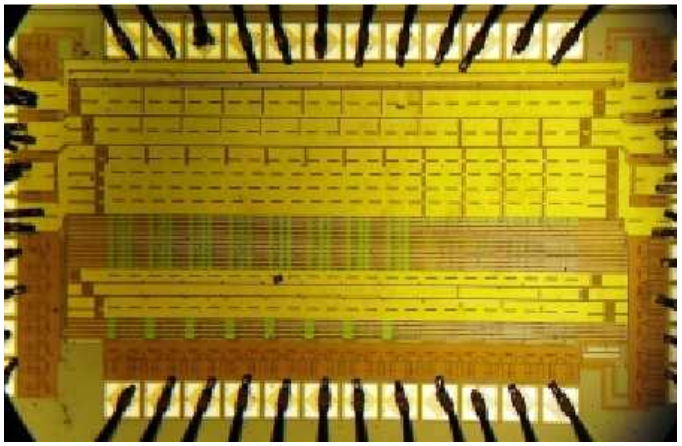


We can verify the "whole" readout chain, but...

Present Setup: what can we do ?

Hamamatsu
S10938-8380



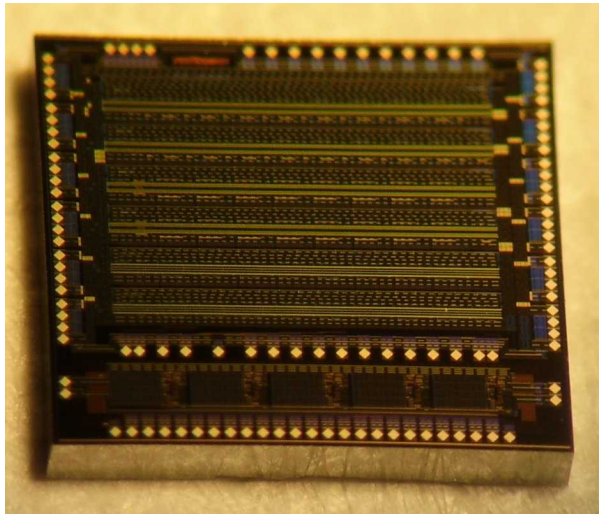


Present front-end ASICs are designed for old specifications and so are not the final ones...

Fanout from sensor to ASICs is “not elegant” and occupies a lot of space...

Maybe in the future we will try to integrate fanout on sensor...

Present Setup: what can we do ?

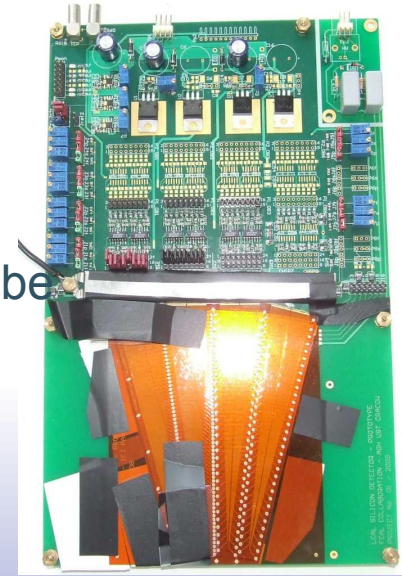


...On the other hand we already have almost final and well working multichannel ADC ASICs (photo not yet taken-the one above is a single channel version) but since we got it very recently it has not been integrated on PCB...

New PCB needs to be done.

Present Setup: what can we do ?

- Having in mind all these considerations we can still verify the whole readout chain (sensor, fanout, front-end, ext. ADC) of the setup very similar (electrically) to the final one.
- We can study the system operation and performance (S/N, crosstalk, ...).
- For sure we will do some silly things from which we will learn (hopefully) to do better for the next time.
- We can and need to fulfil the EUDET milestones (or deliverables?).
- If possible we would very much like to study the signal processing using deconvolution with free running and sampling ADC.
- Taking data with showering plate (tungsten?), for different sensor bias voltage
- Running with calibration trigger in parallel to particle trigger. Will it be possible ??



What next

- There are many things to do and to try:
  - Design of new front-end
  - Investigation on fanout integration on sensor
  - Adding tungsten plates
  - ...
- For next testbeam we will certainly have multichannel ADC integrated on PCB