# Development of highly-performant Depleted Monolithic Active Pixel Sensors for future particle physics experiments

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Generic R&D - UKRI-MPW0

- UKRI-MPW0 completely designed in-house by the HV-CMOS group in the LFoundry 150nm HV-CMOS process
- I designed a new pixel flavour
- Goal: Improve timing by using a new feedback approach
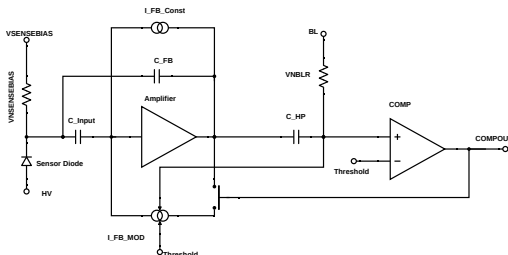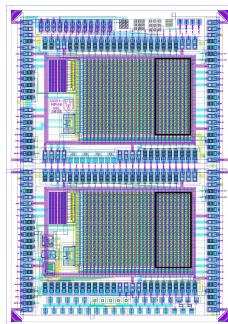
- Comparator triggers feedback
- Compensate trailing edge (TE) timing compared to leading edge (LE)
- Works in simulation
- $\rightarrow$ Now has to be proven in measurement
- Chip has already been fabricated and is to be backside processed soon
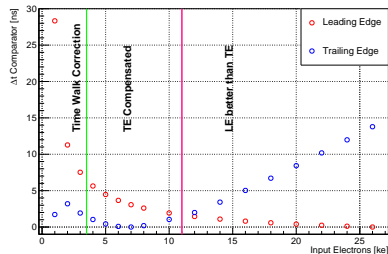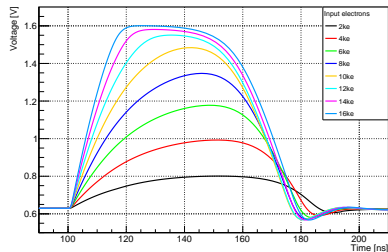
- Run2020 is an in-house MPW from KIT in the TSI 180nm HV-CMOS process
- 9/16 sensors for particle physics
- Readout card designed by me
- 3 sensors interesting for LHCb (different comparators)
- Each has 2 pixel sizes ($50/100\,\mu m \times 165\,\mu m$)
- 4 different amplifier implementations
- $\rightarrow$ 24 flavours in total

LHCb - MuPix10 Irradiation
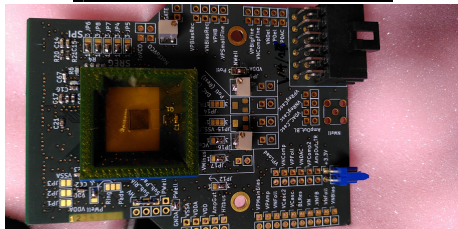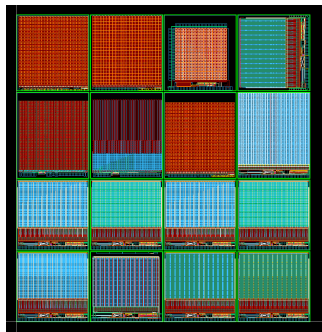
- Investigate radiation hardness of HV-CMOS for LHCb
- MuPix10 irradiation campaign lead by Liverpool
- Mupix10 has $2\,\text{cm} \times 2\,\text{cm}$ active area, only 1 flavour, and the same process as MightyPix
- Lab cooling setup designed by Kieran, controlling by Sigrid
- MightyPix1 to be submitted "soon"