

The MIMOSIS pixel sensor

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MIMOSIS is a CMOS Pixel Sensor developed at IPHC, Goethe University Frankfurt and GSI for high granularity and large hit rate capability. These features meet the requirements of the Micro-Vertex Detector of the Compressed Baryonic Matter, a future experiments at FAIR: spatial resolution of $\sim 5 \mu\text{m}$, minimum radiation tolerance to $7 \times 10^{13} \text{neq/cm}^2$ and 5Mrad, operation in vacuum, and continuous read-out with $5 \mu\text{s}$ integration time and 70MHz/cm^2 peak counting rate.

The architecture combines a pixel array derived from the ALPIDE sensor and a novel digital circuitry. The logic in the periphery regulates the data flow at the output of the pixel array, rating up to 20 Gbits/s, to 2.56 Gbits/s at the sensor outputs, by averaging the data flow over several integration windows. While allowing for high data rates, the power consumption stays below 50mW/cm^2 .

This contribution will detail the sensor design and describe preliminary test results of the first full-scale ($3.1 \times 1.7 \text{cm}^2$) prototype MIMOSIS1.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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