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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 ˜5 µm, minimum radiation tolerance to 7×10ˆ13neq/cm² and 5Mrad, operation in vacuum, and continuous read-out with 5 µs integration time and 70 MHz/cm² 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 50 mW/cm².
This contribution will detail the sensor design and describe preliminary test results of the first full-scale (3.1x1.7 cm²) prototype MIMOSIS1.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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