

The ATLASPIX3 CMOS pixel sensor and module performance

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High voltage CMOS pixel sensors are proposed to be used in future particle physics experiment. The ATLASPIX3 chip consists of 49000 pixels of dimension $50\mu\text{m} \times 150\mu\text{m}$, realized in in TSI 180nm HVCMOS technology. It was the first full reticle size monolithic HVCMOS sensor suitable for construction of multi-chip modules and supporting serial powering through shunt-LDO regulators. The readout architecture supports both triggered and triggerless readout with zero-suppression.

With the ability to be operated in a multi-chip setting, a 4-layer telescope made of ATLASPix 3.1 was developed, using the GECCO readout system as for the single chip setup. To demonstrate the multi-chip capability and for its characterisation, a beam test was conducted at DESY using 3–6 GeV positron beams with the chips operated in triggerless readout mode with zero-suppression. The detector performance have also been tested with hadron beams and operating both with and without the built-in power regulators.

Multichip modules have been operated and behaviour in a serial powering configuration has been tested.

Type of presentation (in-person/online)

in-person presentation

Type of presentation (scientific results or project proposal)

Presentation on scientific results

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