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Active Pixel Sensors in high-voltage CMOS technologies for ATLAS

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Active pixel sensors in high-voltage CMOS technologies combine the possibility to equip the sensor segments with complex electronics and a drift-based signal collection. High radiation tolerance has been demonstrated, which makes the technology interesting for LHC applications.

We have designed a small pixel sensor demonstrator that can be readout using existing pixel or strip-readout systems. In this way, we replace the presently used diode-based sensors with “intelligent” pixel sensors, which should improve the characteristics of the detector. Smaller pixel size, clustering, or simultaneous readout of two sensor layers, are theoretically possible.

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