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Test-beam studies of the monolithic CMOS silicon sensor CLICTD

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The CLIC Tracker Detector (CLICTD) is a monolithic pixel sensor featuring pixels of 30 microns x 37.5 microns and a small collection diode. The sensor is fabricated in a 180 nm CMOS imaging process, using two different pixel flavours: the first with a continuous n-type implant for full lateral depletion, and the second with a segmentation in the n-type implant for accelerated charge collection. Moreover, it features an innovative sub-pixel segmentation scheme that allows the digital footprint to be reduced while maintaining a small sub-pixel pitch. CLICTD was developed to target the requirements for the tracking detector of the proposed future Compact Linear Collider CLIC. Most notably, a temporal resolution of a few nanoseconds and a spatial resolution below 7 microns are demanded. In this contribution, test-beam measurements of CLICTD are presented and the performance of the sensor is evaluated with regard to the CLIC requirements.

Time Zone

Europe/Africa/Middle East

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