

10th Beam Telescopes and Test Beams Workshop



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MALTA Monolithic Pixel Sensor Telescope : New Developments and Recent Measurements

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MALTA is part of the Depleted Monolithic Active Pixel sensors designed in TowerJazz 180nm imaging technology. The MALTA sensor has been produced on Cz substrates in view of optimising the signal for efficiency and time resolution. A custom telescope with MALTA planes has been developed for a testbeam campaign at SPS (CERN) using up to six MALTA tracking planes and the ability to host several devices under test (DUT). The telescope system has a dedicated custom readout, online monitoring integrated into DAQ with realtime hit map, time distribution and event hit multiplicity. It furthermore hosts a dedicated fully configurable trigger system giving the possibility to trigger on coincidence between telescope planes and reference from scintillators. The excellent time resolution performance allows for fast track reconstruction, due to the possibility to retain a low hit multiplicity per event which reduces the combinatorics. The contribution will review the architecture of the system and its performance during the 2021 testbeam campaign at SPS North Area and will present preliminary results on the new generation MALTA2 chips.

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