

11th Beam Telescopes and Test Beams Workshop



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Timing Characterization of a digital SiPM

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Silicon Photo-Multipliers (SiPMs) are pixelated semiconductor detectors consisting of Single-Photon Avalanche Diodes (SPADs). These single-photon sensitive detectors are often analog devices that require separate digitization. Combining SiPMs with digital readout known from modern pixel sensors offers new possibilities like full hitmap readout, pixel masking or fast timestamping.

Such a digital SiPM was developed and tested at DESY. It is a monolithic chip manufactured in a 150nm CMOS process from LFoundry. The chip has a 32x32 pixel matrix and TDC (time-to-digital converter) that allows for timestamps with a resolution of less than 100ps.

Two testbeam campaigns were carried out at the DESY-II testbeam facility to investigate the timing resolution of this chip. In this contribution, an overview of the analysis procedure will be given and first preliminary results presented.

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