

# 11th Beam Telescopes and Test Beams Workshop



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## Beam-test Evaluation of Single-die Bonded Hybrid Assemblies and Timepix3-iLGAD Devices

Thursday 20 April 2023 10:40 (20 minutes)

Single die-bonding enables prototyping of new devices produced in Multi-Project-Wafer submissions. This contribution will introduce two alternative interconnect approaches developed within the scope of the CERN EP-R&D and AIDAInnova projects: single-die bump-bonding and in-house anisotropic conductive adhesive bonding. Focus will be on the interconnect characterisation of the CLICpix2 and Timepix3 hybrid assemblies with planar silicon sensors. Furthermore, the first results of large-area inverse Low-Gain Avalanche Detectors with 55  $\mu\text{m}$  pixel pitch bonded to a Timepix3 readout-chip will be discussed. Noteworthy aspects of the device performance include gain uniformity and timing performance.

The analysed data are obtained from a 120GeV/c pion beam provided at the CERN SPS North Area. Tracking and time-stamping is achieved by the CLICdp Timepix3-based beam telescope setup. Efforts into future-proofing the setup with picosecond track-time resolution, environmental and data-quality monitoring will also be presented.

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