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CMS ETROC beam telescope with test beam results from CERN and DESY and initial integration with AIDA telescope

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The Endcap Timing ReadOut Chip (ETROC) for the CMS MIP Timing Detector is designed to process signals from Low-Gain Avalanche Diodes (LGAD) with a time resolution of 40-50ps per hit. The ETROC2 is the first full size (16x16) prototype design and full functionality design, and in this talk we present the results from the CMS ETROC suitcase style beam telescope results at CERN and DESY to study the timing performance of the ETROC2 chips bump-bonded with 16x16 FBK and HPK LGAD sensors. The ETROC telescope is organized with a self-referential system composed of up to 4 layers/chips without the use of other detectors to study the timing performance. We also present the first successful demonstration of integration of the ETROC with the AIDA telescope platform, with successful beam data acquisition at DESY triggered by the AIDA TLU2 (trigger logic unit) in Dec 2023, with the ETROC chip operated synchronously with the AIDA telescope, paving the way to fully integrate ETROC into the AIDA telescope platform in the future.

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