

Abstract Submitted
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Testing of Front End Electronics for 10ps Time of Flight Detectors¹ MATTHEW KIMBALL, Abilene Christian University, EIC PID CONSORTIUM COLLABORATION — To fully achieve the physics goals of the future Electron Ion Collider (EIC), continued development of the detectors involved is needed. One area of research involves improving the timing resolution of Time of Flight (ToF) detectors from 100ps to 10ps. When the timing resolution of these ToF detectors is improved, better particle identification can be achieved. In addition, as ToF detectors are being constructed with ever improving timing resolution, the need to improve the high speed performance of the fast electronics used in their front-end electronics (FEE) increases. A series of careful measurements has been performed to investigate the performance and efficiency of each element in the FEE chain. The focus of these tests lies on the amplitude transmission efficiency of the high speed signals as a function of frequency, also known as the bandwidth. The components tested include balanced to unbalanced (balun) boards, signal pre-amps, and waveform digitizers. These tests were performed on individual components and with all elements connected over a frequency range of 1MHz to 1GHz. The results of these tests will be presented.

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