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Fast Timing Detector R&D for Forward Proton Detectors at LHC

CHRISTINA SNYDER, University of Iowa — Quartz Timing Cherenkov (QUARTIC) detectors were tested at Fermilab Test Beam Facility in order to determine the timing resolution of very forward protons from collisions at the Large Hadron Collider (LHC). The active media of the detectors are quartz and sapphire, which are radiation hard and high light-yield materials. These detectors are constructed of 20 L-shaped bars that enable one to differentiate and detect more than one proton from the same LHC bunch crossing. The QUARTIC detectors have a small active area of ~4cm^2, which is well-matched to the acceptance of the scattered protons. Our experimental results will be presented and further testing of this design is planned.

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