

Abstract Submitted
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Simulations of the ATLAS Forward Proton Detector TIMOTHY HOFFMAN, ANDREW BRANDT¹, Univ of Texas, Arlington — Our research group is leading the effort to develop a precise time of flight (TOF) detector. This device is part of the proposed ATLAS Forward Proton detector that is planned to be added to the main ATLAS detector at the Large Hadron Collider (LHC) in Geneva, Switzerland in 2015. Due to logistical issues at ATLAS, the original detector design needed to be compacted. However, this new design must perform at least as well as the original. Protons that pass through our detector emit Cherenkov radiation which our detector uses to mark the TOF of that proton via a photomultiplier tube (PMT). The time resolution has a significant dependence on the time spread of the photons seen by the PMT. We can improve the shape of the light pulse (and therefore the resolution of the detector) through the use of optics. I present results on GEANT4 simulations of variations of the detector layout and show how this can improve our time resolution and result in an optimized final design of the detector.

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