

Abstract Submitted
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Time resolution tests of Fine Mesh Photo Multipliers for the CLAS12 Central Time-of-Flight Detector¹ A. REUSTLE, The George Washington University, V. BATURIN, Jefferson Lab, CLAS-12 COLLABORATION — The upcoming CLAS12 Central Time-of-Flight (CTOF) system at Jefferson Lab's Hall B detector will feature a new barrel scintillation detector for identifying particles in that region by TOF-momentum relations. The region will experience a high magnetic field (5T) so the Photo-Multiplier Tubes (PMTs) measuring the scintillations will need to be shielded from this field. New Fine Mesh (FM) PMTs are unaffected by these high Magnetic Fields and would not require the otherwise necessary magnetic shielding of older Linear Focused (LF) PMTs. The question arises whether these FM PMTs produce results refined enough to distinguish between scintillations caused by different species of particles. To distinguish between the Pions, Kaons & Protons expected in the CTOF's given region The PMT's must have a Timing resolution of ~ 50 ps. To test the Timing resolution of FM PMTs we produced an apparatus consisting of a scintillator and acrylic light guides with one of each type of PMT attached at either end. Directed low level, low frequency light was provided via angled LEDs in perfect optical contact with the scintillator, to reproduce the scintillations caused by ionizing particles as closely as possible. The timing resolution of the Fine Mesh PMT was measured at double that of the Linear Focused PMT, within the margin of acceptability for our detector.

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