

Abstract Submitted
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Cosmic Test Stand for Dark Photon Triggers at E906/SeaQuest¹

JOSHUA MARTINEZ, Abilene Christian University, SEAQUEST COLLABORATION — The E906/SeaQuest experiment uses the 120 GeV proton beam from Fermilab's Main Injector aimed at a fixed target to produce Drell-Yan events in order to study the quark and antiquark structure of the nucleon. Through interactions with the beam and the 5m long Fe Magnet, which also serves as a beam dump, this experiment has the potential to produce dark photons which would decay into a dimuon pair. To detect these dark photons, we need to install a new detector system that can trigger on these events that will come from areas the present SeaQuest trigger is designed to exclude as background. The detector system will be made of extruded scintillator with waveshifting optical fiber at its center, which will be matched to a 3mm multi-pixel photon counter (MPPC) Silicon Photomultiplier (SiPM). Then we will need to use programs to map the track back to the vertex inside the Fe magnet. This work describes the construction and operation of a test apparatus that was used to study the efficiency along the entire length of these scintillators to be used in the new dark photon trigger.

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