Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Study of the trigger efficiency for SeaQuest Drell-Yan Dimuons[1]
ZHAOJIA XI, Abilene Christian University, SEAQUEST/E906 COLLABORATION — The SeaQuest (E906) experiment, using the 120 GeV proton beam from the Main Injector at the Fermi National Accelerator Laboratory (FNAL), is studying the quark and antiquark structure of the nucleon using the Drell-Yan process. SeaQuest uses a two magnet focusing spectrometer with four detector stations that include fast plastic scintillator hodoscope planes. The hodoscope arrays along with Field Programmable Gate Arrays(FPGAs) are used to make the SeaQuest trigger system. It is designed to measure events with dimuon pairs from the Drell-Yan process. The signals from each hodoscope, which have adequate timing resolution to determine which 18.9 ns beam pulse the event occurred, are sent to the FPGA trigger modules. In order to get a correct hit pattern, each channel is aligned to the beam RF clock. The trigger is formed when the hits fulfill a dimuon pattern. A program has been developed to analyze and calculate trigger efficiency by using data from hodoscopes. It is important to study trigger efficiency to be used in physics results, such as the cross section of the Drell-Yan process. The method, programming, measurements, and results of this study will be presented.

[1]This research was supported by US DOE MENP Grant DE-FG02-03ER41243

Zhaojia Xi
Abilene Christian University

Date submitted: 24 Jul 2016 Electronic form version 1.4