

Abstract Submitted  
for the DNP15 Meeting of  
The American Physical Society

**Cosmic Test Stand Development for Electron Ion Collider Detector R&D** CECILY TOWELL, Abilene Christian University, PHENIX COLLABORATION — Since the beginning of the spin crisis, questions concerning how the partons inside a nucleon contribute to the nucleon's overall spin have remained unanswered. A new accelerator, called the Electron Ion Collider (EIC), is being designed to answer this and other fundamental questions. The EIC uses an electron beam accelerated to relativistic speeds, which can be collided with polarized protons. This will provide a unique look into the spin structure of the nucleon. However, EIC requirements necessitate significant upgrades in detector performance. This includes Time of Flight (TOF) detectors, which need better timing resolution to improve their particle identification capabilities. New designs for multi-gap Resistive Plate Chambers have the potential of improving the TOF timing resolution to 10 ps. To test this prototype design, a cosmic ray test stand has been assembled which utilizes the coincidence of two hodoscopes as a trigger. To verify the accuracy of the trigger, thereby ensuring the validity of the test stand results, timing and trigger studies were conducted. The results of these systematic studies were compared to expected values produced by a cosmic flux simulation. These studies and their findings will be presented.

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Date submitted: 28 Jul 2015

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