Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

**Testing Mylar Multi-Gap Resistive Plate Chambers**[1] CECILY TOWELL, Abilene Christian University, EIC PID CONSORTIUM COLLABORATION — Quantum Chromodynamics (QCD) is the fundamental theory that successfully explains strong force interactions. To continue the effective study of QCD in nuclear structure, plans are being made to construct an Electron Ion Collider (EIC). Part of the preparation for the EIC includes continued detector development to push beyond their current capabilities. This includes Time of Flight (TOF) detectors, which are used for particle identification. Multi-Gap Resistive Plate Chambers (mRPCs) are a type of TOF detector that typically use glass to make small gas gaps within the detector to produce fast signals when a high energy particle goes through the detector. These extremely thin gaps of 0.2mm are key in achieving the excellent timing resolution capability of these detectors. A new mRPC design is being tested with the goal of reaching a timing resolution of 10ps. This design uses sheets of mylar in place of the glass so that the width of the dividers is smaller, thus vastly increasing the number of gas gaps. Multiple versions of this mylar mRPC have been made and tested. The methods for producing these mRPCs and their performance will be discussed.

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

Cecily Towell
Abilene Christian University

Date submitted: 22 Jul 2016 Electronic form version 1.4