

Abstract Submitted
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The Seasonal Dependence and Two Year Stability of the 30cmx30cm Gas Electron Multiplier Calorimeter YVONNE NG, AMIT BASHYAL, JOSHUA MEDFORD, RONALD MUSSER, TIMOTHY WATSON, ANDREW WHITE, JAEHOON YU, University of Texas at Arlington, UTARLINGTON ADVANCE DETECTORS TEAM — The Gas Electron Multiplier (GEM) is one of the detector technologies for high energy physics calorimetry. Its low power demand and high energy precision have made it one of the ideal candidates amongst other detectors. Since 2002, the UT Arlington Advance Detector team has been working on developing a prototype GEM detector to be used as the sensitive medium in a calorimeter for the Silicon Detector(SID) in the International Linear Collider project(ILC). Various sizes of prototype GEM detectors were built. Building upon the initial characterization of the 30cmx30cm detector in 2009, the seasonal dependence and long term stability of the detector's performance is studied in this project. The self trigger mode of the KPix chip used in this system enables the corrections of the electronics gain variation of the chip and the external trigger for cosmic muons allow stability of the actual detector gains. The pedestal noise hits per channel over time is to study the aging of the chip and detector. Data taken over the past 2.5 years are studied. Results show that the prototype GEM is a stable device with a small variation in its gain over many years.

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