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Analysis of Beam Test Data from UTA GEM Prototype Chambers with One-Bit Digital Readout System DANRAE PRAY, The University of Texas at Arlington, UTA HEP / CALICE COLLABORATION — Gas Electron Multiplier (GEM) technology is currently a strong candidate for a Digital Hadron Calorimeter to be implemented in an experiment in future accelerators such as the International Linear Collider. The University of Texas at Arlington High Energy Physics Group has been developing prototype GEM detectors which contain two layers of GEM foils. The team performed a two week long beam test of four prototype chambers with dimensions 30cm by 30cm at Fermi National Accelerator Laboratory in August of 2011. Three of these chambers were equipped with the one bit DCAL chip readout system jointly developed by Argonne National Laboratory and Fermi National Accelerator Laboratory teams. In this talk, we give an updated report of the results of the test beam data analysis of the GEM prototype detector functionality, responses to various particle types, efficiency dependence on threshold and high voltage, as well as the current/future studies that the UTA team is performing with the GEM detectors and DCAL readout system.

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