

Abstract Submitted  
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**Development of Digital Hadron Calorimeter Using Gas Electron Multiplier Technology** JACOB SMITH, H. BROWN, UT Arlington, C. HAN, ChangWon National University , K.P. HONG, Korean Atomic Energy Research Institute, S.N. KIM, Korea National University of Education, W.J. KIM, ChangWon National University , J. LI, C. MEDINA, UT Arlington, S. PARK, ChangWon National University , ANDREW WHITE, JAEHOON YU, UT Arlington, CALICE COLLABORATION — A sampling digital hadron calorimeter (DHCAL) in combination with the Particle Flow Algorithms could provide the precise jet energy resolution demanded by the physics goals of the International Linear Collider. UTA's High Energy Physics group has been developing a DHCAL using Gas Electron Multiplier (GEM) technology. The prototype GEM detector consists of two layers of GEM foils, the thin copper-clad high voltage resistant polymer foil perforated by a high density of holes. With a high voltage applied and immersed in an easily ionizing gas, this system amplifies charge deposits from traversing charged particles in a hadronic shower. Since the readout pad can be made as small as the pitch (140 microns), GEM can resolve individual particles in the shower down to the tens of microns. Results from beam tests of GEM-based prototypes at Fermilab's Meson Test Beam Facility and cosmic ray tests will be presented. A description of possible electronic readout systems and data acquisition options for GEM based ILC will also be presented.

Jacob Smith  
UT Arlington

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