

Abstract Submitted
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Investigation of Electric Sparks on the Failure of GEM Radiation Detector Prototype AMIT BASHYAL, JAEHOON YU, SEONGTAE PARK, YING WUN YVONNE NG, SAMANTHA LACOMBE, TIMOTHY BLAKE WATSON, University of Texas At Arlington — High energy physics (HEP) looks for the fundamental particles of the universe and the forces between these particles. HEP often uses high energy particle accelerators and massive detectors for these. Experiments in the future particle accelerator, precision measurement of clusters of particles is very important. UTA High Energy Physics (HEP) group has been working on the development and testing of Gas Electron Multiplier (GEM) based calorimeter, an energy measuring device for the past several years. Several prototypes up to 30cmx30cm have been built and exposed to particle beams and cosmic rays. During data taking, however, several electronics channels stopped functioning. Electric discharges in the prototype detector were suspected to be the most probable cause. Understanding the behavior of spark is essential for the reliability of this technology and help mitigating future damage to expensive electronics. In this talk, I will present results from data analysis using statistical methods to understand the behavior of the high voltage sparks in the prototype and the impact to the neighboring channels.

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