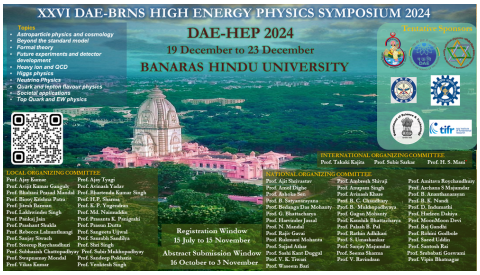

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Application and Utilization of GEM Detectors in Radiation Imaging

With its profound ability to detect particles efficiently and provide excellent timing and spatial resolutions, the Gas Electron Multiplier (GEM) detector has become a highly useful technology in the radiation imaging technique. The large-size imaging detectors can be easily fabricated with GEM detectors due to its low cost. These imaging detectors can be utilized for cargo imaging, soil and clay imaging for agriculture purposes, etc. In this work, we explore the application of the GEM detector in geophysical studies, particularly for the detection and analysis of the materials beneath the soil surface. The use of GEM detectors in clay studies offers a unique advantage due to their ability to identify minute variations in density and composition, which are crucial for identifying buried objects. Also, it proves valuable in agriculture by quantitative measurement of density and gauging moisture levels in soil, which is vital for crop health. We will discuss these practical applications of GEM detectors with initial results obtained from prototypes, which show that the GEM detector, renowned for its precision, plays a vital role in both security and agriculture.

Field of contribution

Experiment

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