Contribution ID: **1167** Type: **Talk**

MINI HYBRID NOVEL COSMIC RAY DETECTOR

Thursday 17 July 2025 15:50 (15 minutes)

Normally, cosmic ray detectors are based on materials where ions or photons are generated as a result of the passage of radiation through the materials, and ions or photons are collected to detect, study, and measure the incident radiation. To combine in one technique, both the ion and photon collection, we planned, designed, constructed, and used a small cosmic ray detector based on one $10\,cm \times 10\,cm \times 10\,cm$ Aluminum block with four ion channels detection of ions by four pairs of collectors inside a high electric field, like a time projection chamber and two photonic channels detection of photons by a couple of photomultiplier tubes. We looked for correlated events between both type of channels. We simulated the whole detector based on the block of Aluminum using CERN GEANT4, and based on similar block of scintillator acrylic, and based on similar volume of air. We got satisfactory results. We present technical details of this cosmic ray detector, and some preliminary physics results.

Collaboration(s)

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Session Classification: CRD

Track Classification: Cosmic-Ray Direct & Acceleration