

# Assembly and test of prototype scintillator tiles for the plastic scintillator detector of the High Energy Cosmic Radiation Detection (HERD) facility

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Satellite experiments for gamma-ray and cosmic ray detection employ plastic scintillators to discriminate charged from neutral particles for gamma-ray identification. The future High Energy Cosmic Radiation Detection (HERD) facility will be able to detect cosmic rays and gamma rays up to TeV energies. The plastic scintillator detector (PSD) will consist of scintillator tiles or bars coupled to Silicon Photomultipliers (SiPMs). Besides the gamma-ray identification, the PSD will measure the ion charge up to iron nuclei, requiring a wide dynamic range from few tens up to thousands of photoelectrons. We have equipped a plastic scintillator tile with Hamamatsu and AdvanSiD SiPMs, coupled to the CAEN DT5550W board based on the CITIROC ASIC. This ASIC allows both a fast trigger formation with configurable threshold and the SiPM charge measurement along two paths with different gain settings. We will present the performance of our prototype system in terms of gain and signal-to-noise ratio.

## TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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