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## The Plastic Scintillator Detector of HERD experiment

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The High Energy cosmic-Radiation Detector (HERD) is a proposed space astronomy payload for the China Space Station. Its main goal is to detect charged cosmic-rays with energies up to a few PeV and gamma-rays with energies above 100 MeV. The Plastic Scintillator Detector (PSD) is a crucial component of HERD, and it is designed to identify photons and accurately measure the charge of incoming cosmic rays, ranging from protons to iron. The PSD must have high detection efficiency, a broad dynamic range, and optimal energy/charge resolution to fulfill its requirements.

The performance of the PSD detector was tested during 2022 and 2023 through beam test sessions at CERN and the CNAO (Centro Nazionale di Adroterapia Oncologica) in Italy. Several PSD prototypes were tested to evaluate their performance with different particles at different momenta. The results of these tests will be presented and compared in terms of energy resolution and ion identification capability, which includes identification of ions with atomic numbers up to  $Z \sim 26$ .

### Eligibility for "Best presentation for young researcher" prize

No

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