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## Particle identification capability of Plastic scintillator tiles equipped with SiPMs for the High Energy cosmic-RadiationDetection (HERD) facility

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The High Energy Cosmic Radiation Detection (HERD) facility onboard the future China's Space Station (CSS) will be able to detect charged cosmic rays and gamma rays from few GeV to PeV energies, giving a valuable contribution in several scientific topics, such as dark matter searches in astrophysical objects, the study of cosmic ray chemical composition and high energy gamma-ray observations. The entire instrument is supposed to be surrounded by a plastic scintillator detector (PSD), which will be used to discriminate charged from neutral particles in order to correctly identify gamma-rays and nuclei. One configuration proposed and studied for the HERD PSD detector consists in a segmented plastic scintillator with a squared-tile geometry, coupled to Silicon Photomultipliers (SiPMs). SiPMs provide similar or even better performances to the standard photomultiplier tubes (PMTs) with lower power consumption and cost benefits. In 2018, beam test campaigns were performed at CERN PS and SPS to test two prototypes of plastic scintillator tiles, equipped with a set of SiPMs. One was tested with a beam of electrons and pions and another prototype with an ion beam. The results will be presented, showing the capabilities of these prototypes to detect charged particles with very high efficiency and to measure the charge of heavier nuclei.

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