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FIT: the scintillating-fiber tracker of the HERD space-borne cosmic-ray experiment

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A new generation of space experiments is essential to address the unresolved questions raised by recent measurements from current experiments, and to further advance our understanding of cosmic rays. The challenge of the direct detection at increasingly higher energies, combined with enhanced energy and angular resolutions, is shaping the design of future detectors. The High Energy cosmic-Radiation Detection facility (HERD) onboard the China Space Station will be the next calorimetric experiment for the direct detection of cosmic rays. The detector will be equipped with a scintillating-fiber tracker (FIT) read out with silicon photomultipliers. A miniature of a FIT sector, called MiniFIT, was designed, built and tested with particle beams at CERN. The FIT design, together with the design and physics performance of MiniFIT and the space qualification of a FIT demonstrator will be presented in this contribution.

Primary experiment

HERD

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