



FIT: the scintillating fiber tracker of the HERD space mission

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The High Energy cosmic-Radiation Detection (HERD) facility is a space payload proposed to be installed onboard the China's Space Station (CSS). The aim of HERD is the direct detection of cosmic rays towards the "knee" of the spectrum (~ 1 PeV) and the monitoring of the full gamma ray sky from 100 MeV.

The HERD core is a calorimeter capable of accepting particles incident on its top and four lateral sides, each equipped with a sector of the scintillating fiber tracker: FIT. The sectors host 7 tracking planes made of modules. The module, composed of a fiber mat and 3 arrays of SiPMs, is the elementary brick of FIT.

Several FIT modules have been built and tested with particle beams at CERN. A spatial resolution of $45 \mu\text{m}$ and a mean hit detection efficiency of 99.6 % were measured.

The space qualification process started with the thermal-vacuum tests of FIT modules and the vibration test of a demonstrator, made of two partially instrumented tracking planes.