

Study of the performances of the DAMPE silicon-tungsten tracker after five years of mission

Thursday 27 May 2021 05:30 (18 minutes)

DAMPE (Dark Matter Particle Explorer) is a satellite-based experiment launched in December 2015 and smoothly taking data after five years of mission. The Silicon-Tungsten Tracker (STK) is characterized by 6 double layers of silicon microstrip detectors, ensuring a total detection area of $\sim 7\text{ m}^2$ and three tungsten plates of 1 mm thick placed in the mechanical support structure aimed to the photon conversion in $e^+ + e^-$ pairs. The STK has a double role: precise reconstruction of the track of both charged particles and photons with a resolution better than $70\text{ }\mu\text{m}$, identification of the charge of the incoming cosmic rays. The STK permits to improve the particle identification together with the increase of the background rejection power in case of single-species studies. The STK performances are excellent after five years of continuous operation in space: in this contribution the STK in-orbit calibration and performances during the whole DAMPE mission will be presented.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

Funding information

Authors: Dr PERRINA, Chiara (Universite de Geneve (CH)); Dr IONICA, Maria (INFN Perugia); AMBROSI, Giovanni (Universita e INFN, Perugia (IT)); Mr CATANZANI, Enrico (Universita e INFN, Perugia (IT)); AZZARELLO, Philipp (Universite de Geneve (CH)); TYKHONOV, Andrii (Universite de Geneve (CH)); WU, Xin (Universite de Geneve (CH))

Presenter: Mr CATANZANI, Enrico (Universita e INFN, Perugia (IT))

Session Classification: Experiments: Trackers

Track Classification: Experiments: Experiments: Trackers