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CALET on-orbit operations and data calibration for 10 years observation on the International Space Station

The Calorimetric Electron Telescope (CALET) is carrying out direct measurements of high energy cosmic rays up to ~ 1 PeV in order to obtain systematic understanding of cosmic ray acceleration and propagation. The detector consisting of a charge detector, an imaging calorimeter, and a total absorption calorimeter, is located on the International Space Station. Data taken by the CALET onboard the ISS is transferred to JAXA and is immediately send to Waseda CALET Operations Center. Data taking started in October 2015 and continues stably without any serious troubles. As of December 31, 2024, the total observation time is 3368 days with a live time fraction of the total time of $\sim 86\%$. Nearly 2.23 billion events are collected with a high-energy ($E > 10$ GeV) trigger. In addition, calibration data acquisition and low-energy trigger modes, as well as an ultra-heavy trigger mode, are consistently scheduled around the ISS orbit. We report the summary of the detector operation on orbit, and also, the data calibration based on the time-dependent corrections.

Collaboration(s)

CALET

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