

Precise Measurement of the Cosmic-Ray Electron and Positron Spectrum with CALET on the International Space Station

Thursday 15 July 2021 19:12 (12 minutes)

Primary objectives of the CALET (CALorimetric Electron Telescope) mission are to search for possible nearby cosmic-ray sources and dark matter signatures with the precise measurement of the electron and positron (all-electron) spectrum. The instrument, consisting of a charge detector, an imaging calorimeter and a total absorption calorimeter, is optimized to measure the all-electron spectrum well into the TeV region with a thick calorimeter of 30 radiation length with fine shower-imaging capability. Due to the excellent energy resolution (a few % above 10 GeV) and the outstanding e/p separation (~ 105), CALET achieves optimal performance for a detailed search for structures in the energy spectrum.

CALET has been accumulating scientific data for more than five years without any major interruption, and the statistics of observed electron events has increased more than double since the latest publication in 2018. In this paper we will present precise measurements of the all-electron spectrum up to several TeV, as obtained with the high statistics data, and we will briefly discuss about its interpretation.

Keywords

Cosmic ray electron, Electron spectrum, Particle acceleration, Nearby source, Dark matter,

Collaboration

CALET

other Collaboration

Subcategory

Experimental Results

Primary authors: Prof. TORII, Shoji (Waseda University); AKAIKE, Yosui (Waseda University); FOR THE CALET COLLABORATION

Presenter: Prof. TORII, Shoji (Waseda University)

Session Classification: Discussion

Track Classification: Scientific Field: CRD | Cosmic Ray Direct