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The latest results of the CALorimetric Electron Telescope (CALET) on the International Space Station

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The CALorimetric Electron Telescope (CALET) space experiment which has been developed by Japan in collaboration with Italy and the United States, is a high-energy astroparticle physics mission installed on the International Space Station (ISS). The primary goals of the CALET mission include studying the details of galactic cosmic-ray acceleration and propagation, and searching for possible nearby sources of high-energy electrons and dark matter signatures. The CALET experiment will measure the flux of cosmic-ray electrons (including positrons) to 20 TeV, gamma-rays to 10 TeV and nuclei with $Z=1$ to 40 up to 1,000 TeV.

The instrument consists of two layers of segmented plastic scintillators for the identification of cosmic-rays via a measurement of their charge (CHD), a 3 radiation length thick tungsten-scintillating fiber imaging calorimeter (IMC) and a 27 radiation length thick lead-tungstate calorimeter (TASC). CALET has sufficient depth, imaging capabilities and excellent energy resolution to allow for a clear separation between hadrons and electrons, as well as between charged particles and gamma rays. The instrument was launched on August 19, 2015 to the ISS and installed on the Japanese Experiment Module-Exposed Facility (JEM-EF). Since the start of operations in mid-October, 2015, CALET has been in continuous observation mode over 7.5 years and mainly triggering on high energy (>10 GeV) cosmic-ray showers without any major interruption. The number of triggered events over 10 GeV is nearly 20 million per month.

By using the data obtained in 7 years on the ISS, we will have a summary of the latest results of CALET for 1) Electron+Positron energy spectrum, 2) Proton and Nuclei spectra, 3) Gamma-ray observations, with the characterization of on-orbit performance. Some results on the electromagnetic counterpart search for LIGO/Virgo gravitational wave events and the observations of solar modulation and gamma-ray bursts are also included.

Auteur principal: TORII, Shoji (Waseda University)

Orateur: TORII, Shoji (Waseda University)

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