

# Vulcano Workshop 2014 - Frontier Objects in Astrophysics and Particle Physics



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## The CALET mission on the International Space Station

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The CALorimetric Electron Telescope (CALET) is an experiment currently under preparation to be launched to the International Space Station (ISS), where it will be installed on the Japanese Experiment Module-Exposure Facility (JEM-EF). Its main scientific goal is to search for possible clues of the presence of astrophysical sources of high-energy electrons nearby the Earth or signatures of dark matter, by measuring accurately the electron spectrum up to several TeV. CALET will also investigate the mechanism of cosmic-ray (CR) acceleration and propagation in the Galaxy, by performing direct measurements of the energy spectra and elemental composition of CR nuclei from H to Fe up to several hundreds of TeV, and the abundance of trans-iron elements at few GeV/amu up to about  $Z=40$ . The instrument consists of two layers of segmented plastic scintillators to identify the particle charge, a thin (3 radiation lengths) tungsten-scintillating fiber calorimeter providing accurate particle tracking and imaging the initial development of the showers, and a thick (27 radiation lengths) calorimeter made of lead-tungstate crystal logs, to measure the energy of CRs with excellent resolution and electron/hadron separation up to the multi-TeV scale.

In this paper, we will review the status of the CALET mission, the instrument configuration and its performance, the results from prototype beam tests at CERN SPS, and the expected measurements of the different components of the cosmic radiation in 5 years of observations.

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