

# Investigating the Vela SNR's Emission of Electron Cosmic Rays with CALET at the International Space Station

*Tuesday 20 July 2021 13:18 (12 minutes)*

The ISS-based Calorimetric Electron Telescope (CALET) is directly measuring the energy spectrum of electron+positron cosmic rays up to 20 TeV. Cosmic-ray electrons of TeV region energy are limited by energy loss to a propagation range of about 1 kpc, therefore the expected sources are a few nearby supernova remnants (SNR), with the Vela SNR dominating the spectrum [Kobayashi et al. 2004].

The latest spectrum measured by CALET in combination with the positron-only flux published by AMS-02 [Aguilar et al. 2019] is fitted with a comprehensive model including nearby pulsars as the source of the positron excess. This model is extended to the TeV region by addition of the flux from the Vela SNR as calculated with DRAGON, with the integrated energy emitted in electron cosmic rays by the SNR as a variable scale factor. Exploring various scenarios for the time and energy dependence of the cosmic-ray release from Vela, under varied propagation conditions, best-fitting interpretations of the spectrum and upper limits on the emission of cosmic-ray electrons by Vela have been derived.

## Keywords

Vela SNR ; Cosmic Ray Acceleration ; Cosmic Ray Propagation

## Collaboration

CALET

## other Collaboration

## Subcategory

Experimental Results

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**Session Classification:** Discussion

**Track Classification:** Scientific Field: CRD | Cosmic Ray Direct