Contribution ID: **275** Type: **Talk**

Analysis Result of the High-Energy Cosmic-Ray Proton Spectrum from the ISS-CREAM Experiment

Wednesday 14 July 2021 18:12 (12 minutes)

The Cosmic Ray Energetics And Mass for the International Space Station (ISS-CREAM) experiment successfully recorded the data for about 539 days from August 2017 to February 2019. In this talk, we report the measurement of the cosmic-ray proton energy spectrum from the ISS-CREAM experiment in the energy range of 2.5 TeV–650 TeV. For the analysis, we used the silicon charge detector (SCD) placed at the top of the ISS-CREAM payload to identify the incoming cosmic-ray charge. The SCD is finely segmented to minimize charge misidentification due to backscatter effects. The four-layer SCD consists of 10,752 silicon pixels, each of which is 1.37 x 1.57 x 0.05 cm3 in size. The calorimeter (CAL) consists of 20 layers of tungsten/scintillating fibers preceded by carbon targets. It provided cosmic-ray tracking, energy determination, and the high-energy trigger. The Top and Bottom Counting detectors (T/BCD) are above and below the CAL, respectively, and provided the low energy trigger. Each T/BCD is composed of an array of 20 x 20 photodiodes on plastic scintillators. The measured proton spectral index of 2.67 ± 0.01 between 2.5 and 12.5 TeV is consistent with prior CREAM measurements. The spectrum softens above ~ 10 TeV consistent with the bump-like structure as reported by CREAM I+III, DAMPE, and NUCLEON, but ISS-CREAM extends measurements to higher energies than those prior measurements.

Keywords

High-energy cosmic ray, ISS-CREAM, Proton spectrum, Direct measurement

Collaboration

ISS-Cream

other Collaboration

Subcategory

Experimental Results

Primary author: CHOI, Gwangho (SungKyunKwan University)

Presenter: CHOI, Gwangho (SungKyunKwan University)

Session Classification: Discussion

Track Classification: Scientific Field: CRD | Cosmic Ray Direct