

Characterizing the isotropic diffuse γ -ray flux (10 – 300 TeV) by the GRAPES-3 experiment

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What is this contribution about?

In this contribution, we report an upper limit on the isotropic diffuse gamma-ray flux over cosmic ray based on the observations made by the GRAPES-3 experiment.

Why is it relevant/interesting?

The work will help in understanding the UHECRs sites of origin and their acceleration mechanism by verifying predictions made by various theoretical models.

What have we done?

Using one year (2014) of observed data, we selected showers with zero muon content as gamma-like and then calculated the integral flux ratio for different threshold shower sizes.

What is the result?

The best upper limits are obtained:

$$I_{\gamma}/I_{CR} \leq 6.24 \times 10^{-5} \text{ for } 182.3 \text{ TeV,}$$

$$I_{\gamma}/I_{CR} \leq 4.62 \times 10^{-5} \text{ for } 264.6 \text{ TeV.}$$