



## GRAPES-3 Experiment

Source: [Phys.org](https://www.phys.org)

The [GRAPES-3](#) experiment in **Ooty, India**, operated by the **Tata Institute of Fundamental Research** has discovered a new feature in the [cosmic-ray proton spectrum](#).

- It was observed at about **166 tera-electron-volt (TeV) energy** while measuring the spectrum spanning from 50 TeV to a little over 1 peta-electron-volt (PeV).
  - "GRAPES-3 experiment discovers new feature above 100 TeV but below the **cosmic-ray proton "Knee,"** suggesting a deviation from **single power-law spectrum.**"
- The observed feature suggests a **potential re-evaluation** of our understanding of cosmic-ray sources, acceleration mechanisms, and their propagation within our galaxy.
  - Centuries-old discovery, cosmic rays are the universe's **most energetic particles**, bombarding [Earth](#) uniformly from all directions, inducing fast-moving particle showers comprising electrons, **photons, muons, protons, neutrons, etc.**
    - Cosmic rays exhibit a **broad energy range** ( $10^8$  to  $10^{20}$  eV) with a steeply decreasing flux based on a power law.

Read more: [Cosmic Rays](#)

PDF Reference URL: <https://www.drishtiias.com/printpdf/grapes-3-experiment>