

Correlation between Meteor Occurrence Rates and Variations in Cosmic Ray Flux

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This study investigates the potential correlation between the occurrence frequency of meteor showers and the arrival rate of cosmic rays. We analyzed two major meteor showers: the Leonids observed in November of the previous year and the Geminids observed in December. We selected these meteor showers because their meteor counts are relatively stable and the influence of solar flares during these periods is minimal. Solar flares are known to affect cosmic-ray arrival rates, and minimizing their impact allowed for a clearer assessment of the relationship under investigation. The analysis did not reveal any statistically significant correlation between meteor activity and cosmic-ray arrival rates. To further refine our understanding, future work will include an examination of the Quadrantids observed in January of this year and the incorporation of data from additional observation sites. These efforts aim to advance the characterization of potential interactions between meteoroid streams and cosmic-ray variability.

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