

A Theoretical Investigation Of Cosmic Rays Flux

In this study, we investigate the differential flux of cosmic rays. Initially, we demonstrate the applicability of Liouville's theorem to cosmic rays, establishing the conservation of intensity in phase space. In the following using the liquid drop model from nuclear physics, we derive the relationship for the differential flux and determine the spectral index in terms of energy, following a power law. We have indicated that the spectral index values are 2.7 and 3.1 for Bosonic and Fermionic distributions, respectively, both of which align with experimental observations.

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