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Critical Aspects of the Nested Leaky-Box Model

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Anomalies in cosmic-ray (CR) fluxes, such as the rising positron flux and the flat antiproton-to-proton ratio, have called into question the standard halo model of CR transport and supposedly support alternative models, such as the nested leaky box model. Here, we test such a model in terms of both primary cosmic-ray spectra, spectra of stable and unstable nuclei and antimatter production. We find the standard version of the model should be considered as ruled out as it is in direct conflict with several observational facts and current data. We further show that the flat antiproton-over-proton ratio proves that the Galactic residence time cannot be energy-independent.

Collaboration(s)

Author: SCHROER, Benedikt

Co-authors: EVOLI, Carmelo (Gran Sasso Science Institute); Prof. BLASI, Pasquale (Gran Sasso Science Institute)

Presenter: SCHROER, Benedikt

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