

ORIGIN OF THE CHARACTERISTIC SHAPE OF BORON-TO-CARBON RATIO AS A FUNCTION OF ENERGY

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One major parameter of cosmic rays, the grammage, is determined by the boron-to-carbon flux ratio and other similar ratios like, for example, ${}^3\text{He}/{}^4\text{He}$. The characteristic of the B/C ratio is the existence of a peak, positioned around $1 \text{ GeV}/u$, where the ratio is 0.32 smoothly decreasing to 0.10 at $100 \text{ GeV}/u$. A calculation of B/C ratio versus energy using the simulation of carbon and boron trajectories in the galactic magnetic field is presented. The effects of source distribution, magnetic field, galactic boundaries and interstellar matter density is studied and a detailed account of the peculiarities of the B/C ratio versus energy is given. The grammage inferred from the B/C ratio of this calculation is compared with that obtained in diffusion and leaky box models.