

Statistical error for cosmic rays modulation evaluation by 1D and 2D models

Friday 16 July 2021 19:18 (12 minutes)

The propagation of cosmic rays through the heliosphere is solved for more than half a century by stochastic methods based on Ito's lemma. This work presents the estimation of statistical error of solution of Fokker – Planck equation by 1D forward stochastic differential equations method.

The error dependence on simulation statistics and energy is presented for different combinations of input parameters. The 1% precision criterium in intensities and 1% criterium in standard deviation are defined as a function of solar wind velocity and diffusion coefficient value. The implications for 1D backward and 2D models are also discussed.

Keywords

Cosmic rays, Fokker - Planck equation, heliosphere, SDE method.

Collaboration

other Collaboration

Subcategory

Theoretical Methods

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Session Classification: Discussion

Track Classification: Scientific Field: SH | Solar & Heliospheric