

The impact of diffusion and convection on the recurring variability of galactic cosmic rays

Agnieszka Gil^{a,b,*}, Renata Modzelewska^a

*a*Siedlce University,

Konarskiego 2, Siedlce, Poland

*b*Space Research Centre, Polish Academy of Sciences,

Bartycka 18A, Warsaw, Poland

E-mail: gila@uph.edu.pl

Corotating interaction regions (CIRs) affecting galactic cosmic rays (GCRs) flux cause a recurrence of GCRs that can be observed on the ground by neutron monitors and in space by space probes. In this study, we examine the recurring variation of GCRs during solar cycles 24 and 25, using mathematical modeling based on the 3-D Parker transport equation. We investigate the impact of diffusion and convection on the shape of this variability and demonstrate that a more realistic description of these processes can be achieved by incorporating CIRs via temporal changes of the heliospheric magnetic field strength and solar wind velocity into the mathematical modeling of the heliospheric GCR transport.

38th International Cosmic Ray Conference (ICRC2023)
26 July - 3 August, 2023
Nagoya, Japan



*Speaker

© Copyright owned by the author(s) under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND 4.0).

<https://pos.sissa.it/>