Geophysical Research Abstracts, Vol. 9, 07981, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-07981

The peculiarities of the quasi-periodic variation of the galactic cosmic rays intensity

A. Gil

Institute of Math. And Physics of University of Podlasie, Siedlce, Poland (gila@ap.siedlce.pl/ Fax: +48-25-6442045)

Changes of the amplitudes of the quasi-periodic (27-day) variation of the galactic cosmic rays (GCR) intensity have been studied based on the numerical solution of the Parker's transport equation for the A>0 and the A<0 polarity periods of solar magnetic cycles. Four basic processes - convection, diffusion, drifts in the regular interplanetary magnetic field and on the plane heliospheric neutral sheet, and the energy changes of the galactic cosmic rays particles in the diverged solar wind are included in the model. The 27-day changes of the solar wind velocity, the interplanetary magnetic field turbulence and the diffusion coefficient were assumed as the main sources of the 27-day variation of the galactic cosmic rays intensity. It was found that the amplitudes of the 27-day variation of the GCR intensity are greater for the A>0 than for the A<0 periods of solar magnetic cycles when the heliolongitudinal asymmetry of the solar wind velocity is taken into consideration. We assume that these peculiarities are caused by the direction-changeable radial component of the drift stream of GCR in different periods of solar magnetic cycles. In the A>0 period the stream of drift is directed outward from the Sun, while in the A<0 period of solar magnetic cycle the stream has vice versa direction.