Maxwell's equations for the irregular heliolongitudinal solar wind velocity

M.V. Alania (1,2), R. Modzelewska (1), and A. Wawrzynczak (3)

(1) Institut of Math. and Physics, University of Podlasie, Siedlce, Poland (renatam@ap.siedlce.pl), (2) Institute of Geophysics, Georgian Academy of Sciences, Tbilisi, Georgia, (3) Institute of Computer Science of University of Podlasie, Sienkiewicza 51, 08-110 Siedlce, Poland

We study the structure of the heliospheric magnetic field based on the numerical solutions of Maxwell's equations with the changeable solar wind velocity. System of Maxwell's equations was solved numerically taking into account irregular heliolongitudinal dependence of the radial component of the solar wind velocity approximately corresponding to the experimental data. The proposed model of the interplanetary magnetic field is justified by the solution of the equation divB = 0 with the irregular solar wind velocity. We compare the results of numerical solutions of the Maxwell's equations with the Parker's standard model of the interplanetary magnetic field.