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Peculiarities of the observed recurrence of Jovian electron fluxes at the Earth orbit

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According to the model of transfer of Jovian electrons to the Earth by a magnetic trap formed by interplanetary magnetic field lines connected with the Sun, the variations of high-energy electron fluxes should have 27-day periodicity due to the rotation of the Sun and therefore the magnetic trap as well. It turned out that in reality, under short-lived (about 1-3 solar rotations) magnetic traps, the periods of increase of Jovian electron flux are rather often coordinated with the rotation period of the Sun. However, for long-living traps, especially in 2007-2008, when a long series of Jovian electron peaks was observed over 14 consecutive rotations of the Sun, the average period of these enhancements was only 26.2 days, which is markedly different from the synodic period of the solar rotation, equal to 27.3 days in the solar equatorial plane.

Possible reasons for this discrepancy are discussed; in particular explanation for this discrepancy may be obtained by joining the magnetic trap model with CIRs. A mechanism of modulation of electron fluxes by CIRs, acting simultaneously with the trap, can reduce period of observed variations of Jovian electron fluxes.

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