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The possible excitation mechanism of the burst regimes of long-period irregular pulsations (the series of ipcl bursts)

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The results of investigation of a solar wind plasma and interplanetary magnetic field parameters at which are excited long-period irregular pulsations in a frequencies band 2.0 - 6.0 mHz (the series of ipcl bursts) are presented. The comparative analysis of distributions of 1-hour averages values of an interplanetary medium parameters is carried out during observation of the series of ipcl pulsations bursts and background distributions of the same parameters for analyzable years of which sampling of pulsations was made. It was shown that distributions of plasma flow speed (V) and flow pressure (P) solar wind during observation of the series of ipcl pulsations bursts essentially differ from background distributions. Distributions of other parameters of an interplanetary medium during observation of the series of ipcl pulsations bursts practically do not differ from background. Threshold values V and P at which excitation burst regimes is start were found. So the threshold of excitation of the series of ipcl pulsations bursts on the V is in the range 300 - 350 km/s and on the P in the interval 1-2 nPa. Earlier we have shown that the series of ipcl pulsations bursts are observed in the region of the dayside polar cusp and represent the nonlinear fractal structures possessing by solitons properties. Besides to bursts peculiar regularities of intermittent processes which tightly bound with the turbulence. The whole complex of the obtained experimental facts is allow put forward the supposition that ipcl pulsations bursts are excited on front boundary of the magnetosphere. As one possibility of generation mechanisms of bursts regimes ipcl the mechanism analogous to wind-wave instability in hydrodynamics (the Milse - Phillips mechanism) can be considered. It is known this instability is stipulated by various factors in a flow of a solar wind among which the turbulence and a threshold value of the speed play a defining role. As distinct from the Kelvin - Helmholtz instability wind - wave instability reduces in an amplification of waves at much smaller velocities of a solar wind, as it is typical for conditions of bursts ipcl generation.
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