Geophysical Research Abstracts, Vol. 7, 01400, 2005
SRef-ID: 1607-7962/gra/EGU05-A-01400

Electromagnetic waves effective saturation of absorption in a magnetospheric plasma maser and short-periodical VLF-emissions

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The properties of the quasilinear interaction of whistler waves with planetary radiation belts are studied. It is shown that quasilinear relaxation can lead to increase in increment of cyclotron instability at the leading front of an electromagnetic pulse. This effective saturation of absorption makes energetically advantageous for the noise emission to be divided into separate electromagnetic pulses. Peculiarities and manifestations of saturation of absorption are discussed. The results are important for exploration of time and space structure of electromagnetic emissions and particle fluxes. We pay special attention to the short-periodical VLF emissions characterised by the spectral form repetition periods in the typical time interval: 2-6 s.