



**HAL**  
open science

## Intensities and periodic structures of magnetospheric line radiation and quasiperiodic emissions: Dependence on solar wind parameters

Barbora Bezdekova, František Němec, Jan Záhlava, Mychajlo Hajoš, Michel Parrot, Ondřej Santolík

### ► To cite this version:

Barbora Bezdekova, František Němec, Jan Záhlava, Mychajlo Hajoš, Michel Parrot, et al.. Intensities and periodic structures of magnetospheric line radiation and quasiperiodic emissions: Dependence on solar wind parameters. 19th EGU General Assembly, Apr 2017, Vienne, Austria. pp.3270. insu-03568155

**HAL Id: insu-03568155**

<https://hal-insu.archives-ouvertes.fr/insu-03568155>

Submitted on 12 Feb 2022

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution| 4.0 International License



## **Intensities and periodic structures of magnetospheric line radiation and quasiperiodic emissions: Dependence on solar wind parameters**

Barbora Bezdekova (1), František Němec (1), Jan Záhlava (1), Mychajlo Hajoš (2), Michel Parrot (3), Ondřej Santolík (2,1)

(1) Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic, (2) Institute of Atmospheric Physics, Czech Academy of Sciences, Prague, Czech Republic, (3) LPC2E/CNRS, Orleans, France

Electromagnetic waves observed in the inner magnetosphere at frequencies of a few kHz sometimes exhibit nearly harmonic frequency modulation or almost periodic time modulation of the wave intensity. Such emissions are usually called magnetospheric line radiation and quasiperiodic emissions, respectively. Although their existence is known for already a few decades, and they are rather routinely observed both by ground-based and satellite instruments, their generation mechanism still remains unclear. We investigate a relation of the event occurrence and properties to solar wind parameters. Specifically, we analyze how the event intensities and periodic structure (frequency spacing or the modulation period) depend on the solar wind dynamic pressure, solar wind speed, plasma number density, and interplanetary magnetic field. It is found that the behavior of quasiperiodic events with modulation periods larger than about 20 s is rather different from the behavior of quasiperiodic events with lower modulation periods. This suggests that quasiperiodic events with lower and larger modulation periods may have a different generation mechanism. We also investigate a possible relation between magnetospheric line radiation and quasiperiodic emissions, as well as their link to hiss emissions observed in the same frequency range.