Japan Geoscience Union Meeting 2014
(28 April - 02 May 2014 at Pacifico YOKOHAMA, Kanagawa, Japan)

PEM10-02 会場:414 時間:4 月 29 日 14:35-14:50

加速膨張する太陽風プラズマにおける振幅変調アルヴェン乱流の非線形発展
Nonlinear evolution of envelope-modulated Alfvenic turbulence in expanding accelerating solar wind plasmas

成行 泰裕[1*] ; 羽田 亨[2] ; 坪内 健[3]
NARIYUKI, Yasuhiro[1*] ; HADA, Tohru[2] ; TSUBOUCHI, Ken[3]

[1] 富山大学人間発達科学部, [2] 九州大学大学院総合理工学研究院, [3] 東京工業大学大学院理工学研究科
[1]Faculty of Human Development, University of Toyama, [2]E.S.S.T., Kyushu University, [3]Tokyo Institute of Technology

It is well known that low-frequency Alfvenic turbulence is ubiquitously observed in solar wind plasmas. There is great interest in nonlinear evolution of the Alfvenic turbulence, since the observational studies clarified that the Alfvenic turbulence disappear with the increasing heliocentric distance and the fully-developed turbulence becomes dominant. Although most past studies on Alfvenic turbulence assumes uniform background plasmas and magnetic fields, the effects of the inhomogeneity may not be negligible in the inner-heliosphere, in which several future spacecraft missions are planned. It is important that even if the wave reflection due to the inhomogeneity is negligible, the inhomogeneity of background plasmas and magnetic field may affect the nonlinear interaction among waves through contraction and reflection of the waves and the radial dependence of the back ground parameters such as the Alfven velocity and the ion cyclotron frequency. In the present study, the nonlinear evolution of low-frequency, quasi-parallel propagating Alfvenic turbulence is studied by using the two-dimensional hybrid accelerating expanding box model. The dependence of the nonlinear evolution of Alfvenic turbulence on the effects of the inhomogeneity is discussed.

キーワード: 太陽風, アルヴェン乱流, イオン運動論
Keywords: solar wind, Alfvenic turbulence, ion kinetics