

加速膨張する太陽風プラズマにおける非線形アルヴェン波の理論モデル
A theoretical model of nonlinear Alfvén waves in expanding accelerating solar wind plasmas

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During about forty years, a lot of studies have discussed the linear and nonlinear dynamics of Alfvén waves in solar wind plasmas. Although the uniform plasmas are assumed in most past studies, the effects of the inhomogeneity of background plasmas cannot be negligible in the inner heliosphere, in which several future spacecraft missions are planned. In the present study, a nonlinear evolution equation of envelope-modulated Alfvén waves is derived from the magnetohydrodynamic accelerating expanding box model by using the reductive perturbation method. The effects of the acceleration of solar wind to nonlinear evolution are discussed in detail.

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