# A theoretical model of nonlinear Alfven waves in expanding accelerating solar wind plasmas

NARIYUKI, Yasuhiro[1]*

[1]Faculty of Human Development, University of Toyama

During about forty years, a lot of studies have discussed the linear and nonlinear dynamics of Alfven 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 Alfven 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.

Keywords: solar wind, Alfvenic turbulence