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Kinetic Alfvén Wave Excitation by magnetosonic Wave in Plasmas SANJAY KUMAR, R.P. SHARMA, Centre for Energy Studies, Indian Institute of Technology Delhi 110016, India — This paper presents the model equations governing the nonlinear interaction between dispersive Alfvén wave (DAW) and magnetosonic wave in the high-β plasmas ($m_e/m_i \ll \beta$; known as kinetic Alfvén waves (KAWs); here $\beta = 8\pi n_0 T/B_0^2$ is thermal to magnetic pressure, is n_0 unperturbed plasma number density, $T(= T_e \approx T_i)$ represents the plasma temperature, and $m_e(m_i)$ is the mass of electron (ion)). This nonlinear dynamical system may be considered as the modified Zakharov system of equations (MZSE). These model equations are solved numerically by using pseudo-spectral method to study the nonlinear evolution of the KAW turbulence in solar wind at 1AU. We observed the nonlinear evolution of KAW magnetic field structures having chaotic behavior associated with the magnetosonic wave. Relevance of these investigations to the high-β plasmas in solar wind has been pointed out. The acceleration of the solar wind may be produced by the coupling of KAW and magnetosonic wave via filamentation process as discussed here.

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