# Nonlinear coherent structures generation and particle acceleration in space plasmas

**R.P.Sharma**,M.Malik and H,D.Singh

Indian Institute of Technology Delhi (rpsharma@ces.iitd.ernet.in)

Taking into account the proper nonlinearties,a modified nonlinear Schrodinger equa- tion model (MNLS)has been derived for low beta plasma when kinetic Alfven /inertial Alfven waves are propagating.Analytical and numerical methods have been used to study the localization of these waves in solar wind and solar corona.Parameters,like,transverse wave number,initial pump power and plasma parameters have been changed to study the effect on localization process,Effect of the presence of second Alfven wave on localization has also been studied.Wave spectra corresponding to magnetic and electric fields have been calculated.Gneration of ion accoustic wave at difference frequency and the nonlinear dynamics of this wave has been studied.This reveals the chaotic pattern of the ion accustic wave which is having a broad spectrum because of localization of pump Alfven waves.Using the Fokkar Planck equation and velocity space diffusion,ion heating has been studied.Relevence of these studies to solar wind turbulence and solar coronal heating is pointed out.