Kinetic Alfvén wave turbulence in solar wind plasmas at heliocentric distances

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We have investigated the turbulent spectra of Kinetic Alfven wave (KAW) due to filamentation process in the presence of Landau damping. The numerical simulations of model equation governing the nonlinear dynamics of the KAW in the presence of Landau damping are presented. When the ponderomotive and Joule heating nonlinearities are incorporated in the KAW dynamics, the power spectra of the turbulent field is evaluated and used for particle heating. Our results reveal the formation of damped coherent magnetic filamentary structures and the turbulent spectra. The effect of Landau damping is to make the turbulent spectra steeper. We have studied the turbulence with different initial conditions. Using the Fokker-Planck equation with the new velocity space diffusion coefficient, we find the distribution function of energetic electrons in these turbulent structures. Landau damped KAW may be responsible for the plasma heating and particle acceleration in solar wind at heliocentric distances ($0.3\text{AU} \le r < 1.0\text{AU}$).