Abstract Submitted
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Co-existence of Whistler Waves with Kinetic Alfven Wave Turbulence for the High-Beta Solar Wind Plasma[1] MANISH MITHAIWALA, Naval Research Laboratory, LEONID RUDAKOV, Icarus Research Inc., GURUDAS GANGULI, CHRIS CRABTREE, Naval Research Laboratory — It is shown that the dispersion relation for whistler waves is identical for a high or low beta plasma. Furthermore in the high-beta solar wind plasma whistler waves meet the Landau resonance with electrons for velocities less than the thermal speed, and consequently the electric force is small compared to the mirror force. As whistlers propagate through the inhomogeneous solar wind, the perpendicular wave number increases through refraction, increasing the Landau damping rate. However, the whistlers are not damped since the background kinetic Alfven wave turbulence creates a plateau by quasilinear diffusion in the solar wind electron distribution at small velocities [Rudakov et al., 2011]. The diffusion coefficient for whistlers in a high beta plasma is determined from mirror force. For a whistler spectrum similar to that of KAW, it is found that for whistler energy density of only $\sim 10^{-3}$of the kinetic Alfven waves, the quasilinear diffusion rate due to whistlers and KAW are comparable. Thus very small amplitude whistler turbulence can have a significant consequence on the evolution of the solar wind electron distribution function. L. Rudakov, M. Mithaiwala, G. Ganguli, and C. Crabtree. Phys. Plasmas **18**, 012307 (2011); http://dx.doi.org/10.1063/1.3532819

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