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**Induced Nonlinear Scattering of Magnetospherically Reflecting Whistlers**[1] C. CRABTREE, NRL, L. RUDAKOV, Icarus Research Inc., G. GANGULI, M. MITHAIWALA, NRL, V. GALINSKY, V. SHEVCHENKO, UCSD —
Whistler waves play an important role in regulating the energetic electron population of the Earth's inner magnetosphere through pitch angle scattering of resonant electrons. There are many potential sources of whistlers in the lower magnetosphere ($L \sim 2-3$), e.g., lightening discharges and unstable particle distributions. Once the whistler waves are generated, they are maintained in an effective cavity around the lower-hybrid resonant surface where they participate in pitch angle scattering of energetic resonant electrons before ultimately being dissipated. In this paper we demonstrate that when the energy density of whistler wave turbulence exceeds a threshold, which we estimate occurs at $\delta B \sim 30-50$ pT, the process of nonlinear induced scattering by thermal electrons [1] dominates both electron-ion collisional damping and linear Landau damping. This has three important consequences: 1) the lifetime of whistler wave turbulence is increased from seconds to 10s of seconds, 2) the whistler wave packets spend more time away from the lower-hybrid surface and thus interact more efficiently with energetic electrons, 3) the lifetime of trapped electrons is reduced.

[1] Ganguli *et al.*, Phys Plasmas (2010).

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