R008-06
C 会場 ：11/26　AM2 （10:30-12:00）
10:30〜10:45

カッパ分布関数をもつ高エネルギー電子によるホイッスラーモード・コーラス放射の非線形成長理論

#大村 善治 [1)], サマーズ ダニー [2)], 李 莉 [3)]
([1] 京大・生存圏, [2] ニューファウンドランド・メモリアル大学, [3] 中国地質大学

Nonlinear wave growth theory of whistler-mode chorus emissions induced by energetic electrons forming Kappa distribution

#Yoshiharu Omura[1)], Danny Summers[2)], Li Li[3)]
([1]Research Institute for Sustainable Humanosphere, Kyoto University, [2]Memorial University of Newfoundland, [3]China University of Geoscience

In the nonlinear wave growth theory of whistler-mode chorus and hiss emissions, a Maxwellian distribution function is assumed for the momentum distribution function of energetic electrons. Both spacecraft observations and computer simulations show that the wave amplitudes and frequency ranges of chorus and hiss emissions are well described by the profiles of threshold and optimum wave amplitudes, and nonlinear growth rates as functions of frequency. Assuming Kappa-Maxwellian distribution instead of the subtracted Maxwellian distribution function, we derive the expressions of the threshold and optimum wave amplitudes and the nonlinear growth rates. We compare the profiles of these properties for Kappa-Maxwellian distribution functions. We analyze effects of enhanced high-energy tails of relativistic electrons on the nonlinear wave growth processes of whistler-mode chorus emissions outside the plasmapause and hiss emissions inside the plasmapause.