Nonlinear resonant scattering of radiation belt relativistic electrons by oblique EMIC waves

*Geng Wang[1], Zhenpeng Su[1], Zhonglei Gao[1]

1.University of Science and Technology of China

Resonant scattering by EMIC waves has long been proposed as a candidate loss mechanisms for radiation belt relativistic electrons. Such resonant interaction process has been found to be in the nonlinear (rather than quasi-linear) regime. However, previous works are usually limited to the parallel EMIC waves, and the nonlinear scattering process by oblique EMIC waves remains to be investigated in detail. In this study, we perform test-particle simulations to examine the dependence of nonlinear characteristics on wave normal angle and resonance order. Our results provide in-depth understanding of the nonlinear loss of radiation belt relativistic electrons induced by EMIC waves.

Keywords: EMIC wave, non-linear, resonant

