

PEM024-P08

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## Property of 2nd harmonic cyclotron damping with UHR wave in the inner magnetosphere plasma

Kazuya Sato<sup>1\*</sup>, Takayuki Ono<sup>1</sup>, Atsushi Kumamoto<sup>2</sup>

<sup>1</sup>Geophysics Sci., Tohoku Univ, <sup>2</sup>PPARC, Geophysics Sci., Tohoku Univ

The phenomenon that electric field intensity damps in the frequency that UHR wave and two times electron cyclotron frequency cross is seen frequently by Dynamic spectrum data observed plasma waves and sounder(PWS) system [Oya et al., 1990] on board the Akebono satellite.

Because UHR wave is observed universally in the inner magnetosphere, it has important meaning to investigate an interaction between UHR wave and the electrons to appreciate the plasma heating mechanism and wave-particle interaction in the inner magnetosphere.

In this study, damping around two times electron cyclotron frequency in UHR wave is named "2nd harmonic cyclotron damping", and we perform event analysis.

As a result, it has been clarified that 2nd harmonic cyclotron damping cause UHR-mode wave, and doesn't cause Z-mode wave.

we perform statistical analysis in 1992 year. it has been clarified observationally that an interaction was caused easily between UHR wave and the electrons.

And we investigate statistical occurrence property of 2nd harmonic cyclotron damping, it has been clarified that 2nd harmonic cyclotron damping doesn't depend on altitude and magnetic local time, and localize on the geomagnetic latitude ranging 20 to 40 and -40 to -20 degrees.

Keywords: UHR wave, wave-particle interaction, damping, EXOS-D Satellite, cyclotron