

## Recent progresses in understanding the contribution of EMIC waves to radiation belt electron scattering

\*Binbin Ni<sup>1</sup>, Xing Cao<sup>1</sup>, Danny Summers<sup>2</sup>, Song Fu<sup>1</sup>, Jacob Bortnik<sup>3</sup>, Xin Tao<sup>4</sup>, Yuri Shprits<sup>5</sup>

1. Wuhan University, 2. Memorial University of Newfoundland, 3. University of California, Los Angeles, 4. University of Science and Technology of China, 5. German Research Centre For Geosciences

Resonant wave-particle interactions are long thought as a fundamental cause driving the dynamic variability of Earth's electron radiation belts. In terms of violating one or more adiabatic invariants, magnetospheric waves have been regarded as a necessary agent to transfer energies between different populations of particles. This presentation focuses on some recent progresses in understanding the electron scattering effects of EMIC waves. While cyclotron resonant electron scattering by EMIC waves has been well studied and found to be a potentially crucial electron scattering mechanism, the recent investigation demonstrates that bounce resonant electron scattering may also be very important in a manner to resonate with near-equatorially mirroring electrons over a wide range of L-shells and energies. It is strongly suggested that bounce resonance scattering by EMIC waves should be incorporated into future modeling efforts of radiation belt electron dynamics.

Keywords: Earth's radiation belts, resonant wave-particle interactions, EMIC waves