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Bounce resonant scattering by magnetosonic waves – diffusion coefficients and a parametric study ARMANDO MALDONADO, LUNJIN CHEN, The University of Texas at Dallas — Electron bounce resonant scattering is a new area of interest in Van Allen radiation belt modeling. Magnetosonic waves are suspected as one of the main driving forces for bounce resonant scattering. Bounce diffusion rates with magnetosonic waves are useful in relating simulations to observations and previous studies have attempted to calculate and understand these rates. In the past, these studies have used a guiding center approach for the gyrating electron, ignoring effects such as the Lamor radius effect, changes in the first adiabatic invariant and latitudinal wave power distribution. In this study, our motivation is to explore these effects in comparison with previous studies to understand their importance. A set of theoretical bounce diffusion rates are provided along with test-particle simulation diffusion rates which are found to closely agree with each other. Additionally, we provide a parametric study on the electron's, magnetosonic wave's and environment background properties to understand the behavior of bounce resonant scattering.

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None

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