## Abstract Submitted for the DPP09 Meeting of The American Physical Society

Relativistic Electron Scattering by Electromagnetic Ion Cyclotron Fluctuations: Test Particle Simulations KAIJUN LIU, Los Alamos National Laboratory, Los Alamos, NM, 87545, DON S. LEMONS, Department of Physics, Bethel College, North Newton, Kansas, 67117, DAN WINSKE, S. PETER GARY, Los Alamos National Laboratory, Los Alamos, NM, 87545 — Relativistic electron scattering by electromagnetic ion cyclotron (EMIC) fluctuations is studied using a test particle simulation code. The EMIC fluctuation input comes from a one dimensional, self-consistent hybrid simulation model and is due to the growth of the ion cyclotron instability driven by the ion temperature anisotropy,  $T_{i\perp}$ > $T_{i\parallel}$ , in a magnetized, homogeneous, collisionless plasma with a single ion species. The test particle code follows the motion of relativistic test electron particles in the input EMIC fluctuations. The time evolution of the mean-square pitch angle change is calculated and used to estimate the pitch angle diffusion coefficient. Finally the results are compared with quasi-linear diffusion theory. The present study has applications to relativistic electron dynamics in the terrestrial magnetosphere.

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