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Whistler Turbulence Heating of Electrons and Ions: Three-Dimensional Particle-in-Cell Simulations S. PETER GARY, Space Science Institute, R. SCOTT HUGHES, JOSEPH WANG, University of Southern California — Three-dimensional particle-in-cell simulations are used to study the decay of magnetosonic-whistler fluctuations in a collisionless, homogeneous, magnetized, electron-ion plasma model. The simulations are initialized with a distribution of narrowband long wavelength modes that is relatively isotropic and initial electron β_e values of 0.25 and 1.0. The computations follow the temporal development of the fluctuations as they cascade to broadband, anisotropic turbulence at shorter wavelengths. Dissipation of the cascaded fluctuations at quasi-perpendicular propagation leads to electron heating preferentially parallel/antiparallel to the background magnetic field $\mathbf{B}_o$ and ion energy gain is preferentially in directions perpendicular to $\mathbf{B}_o$ The rate of perpendicular ion heating scales approximately as $\beta_e^{1/2}$ and as the initial energy density of the magnetic fluctuations.

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