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**Magnetic Turbulence Cascade and Electron Heating in Relativistic Plasmas** EDISON LIANG, GUY HILBURN, Rice University, HUI LI, SIMING LIU, Los Alamos National Laboratory — Magnetorotational instability (MRI) generates MHD turbulence, which transports angular momentum and drives accretion flows onto compact astrophysical objects. High resolution MHD simulations show that this turbulence is highly anisotropic, with complex current sheet structures and a spectrum consistent with Kolmogorov. Using Particle-in-Cell (PIC) codes, we have simulated the kinetic dissipation of magnetic turbulence cascade in relativistic plasmas, using as initial conditions magnetic field and current sheet patterns similar to those found in MRI MHD simulations, but extrapolated down to the kinetic scale, assuming that self-similarity holds in the inertial range. We find that electron heating is much more effective when the wave turbulence is combined with thin current sheets in the transverse dimension. In this case the wave turbulence induces and enhances magnetic reconnection along the current sheets, producing a superthermal electron component on top of thermal heating. A significant fraction of the magnetic energy is converted to hot electrons with energies exceeding tens of MeVs.

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