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Kinetic Magnetorotational Turbulence and Dynamo MATTHEW KUNZ, JAMES STONE, Princeton University, ELIOT QUATAERT, University of California, Berkeley — Low-luminosity black-hole accretion flows, such as that at the Galactic center, are collisionless. A kinetic approach is thus necessary to understand the transport of heat and angular momentum, the acceleration of particles, and the growth and structure of the magnetic field in these systems. We present results from the first 6D kinetic numerical simulation of magnetorotational turbulence and dynamo, using the local shearing-box model. Special attention will be paid to the enhanced transport of angular momentum by field-aligned pressure anisotropies, as well as to the ion-Larmor-scale kinetic instabilities (firehose, mirror, ion-cyclotron) which regulate those anisotropies. Energy spectra and phase-space evolution will be discussed. Time permitting, dedicated nonlinear studies of firehose and mirror instabilities in a shearing plasma will also be presented as a complement to the study of the magnetorotational instability. The profits, perils, and price of using a kinetic approach will be briefly mentioned.

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