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Gyrokinetic simulations of toroidal angular momentum transport in electrostatic drift-wave turbulence[1] IHOR HOLOD, University of California Irvine — Comparative studies of toroidal angular momentum transport in collisionless trapped electron mode (CTEM) and ion temperature gradient (ITG) mode turbulence with kinetic electrons are presented. Diffusive, convective and residual components of momentum flux are separated. Significant intrinsic rotation is observed with the direction opposite for the CTEM and ITG turbulence. The perturbed momentum profile strongly correlates with the radial profile of self generated zonal flow. Momentum convective flux is separated into momentum pinch and particle convective parts. We demonstrate that outward particle flux can compete with inward momentum pinch, leading to the possible reversal of the direction of momentum convective flux. Parametric studies of the momentum pinch show no explicit dependence of pinch velocity on plasma temperature inhomogeneity scale length, but strong dependence on the density gradient scale length, for a given turbulence regime. The intrinsic Prandtl number, describing momentum diffusivity, is calculated for CTEM and ITG turbulence.

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