

Abstract Submitted
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Progress in turbulence studies in the TORPEX Simple Magnetized Torus¹ IVO FURNO, AMBROGIO FASOLI, ALEXANDRE BOVET, CRPP-EPFL, MARK GILMORE, UNM-ABQ, KYLE GUSTAFSON, DAVOUD IRAJI, BENOIT LABIT, DIANE LANCON, JOAQUIM LOIZU, PAOLO RICCI, CHRISTIAN THEILER, CRPP-EPFL — We report on advances in understanding ideal interchange electrostatic turbulence, related turbulent structures and their effect on particle, heat, current, and toroidal momentum transport in TORPEX magnetized plasmas. These advances are obtained using high-resolution electrostatic and magnetic probes, fast visible imaging, scan of the control parameters, linear fluid models and nonlinear global 3D numerical simulations. We describe methods to influence the dynamics of turbulent structures, such as varying the connection length or using biased electrodes. The effect of turbulence on fast ion phase space dynamics is studied using movable fast ion source and detector. Results are compared with simulations of tracer fast ions injected into simulated TORPEX turbulent fields, which are part of an extensive validation and verification project. Finally, we describe future developments, which include a helicon antenna to decouple plasma production from the magnetic field and a new internal toroidal conductor to close magnetic field lines.

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