Abstract Submitted
for the DPP00 Meeting of
The American Physical Society

Sorting Category: 6.1.0 (Theoretical)

**Animation of Drift Ballooning Modes and Zonal Flow Turbulence**[1] J. CANDY, R.E. WALTZ, M.N. ROSENBLUTH, General Atomics — It is now well known that high-$n$ drift ballooning modes nonlinearly generate toroidally symmetric ($n = 0$) modes (so-called "zonal flows") with radial variation. The sheared $E \times B$ motion from these zonal flows in turn stabilizes the high-n modes that cause radial transport. If the zonal flows are collisionally damped, the level of transport will typically increase. This predator-prey picture is believed to represent the nonlinear saturation mechanism of high-$n$ turbulence in tokamaks. In this poster we present a continuous stream of animations from the continuum gyrokinetic code GYRO to illustrate drift-balloning modes and zonal flows in linear states and in fully develped states of ion temperature gradient turbulence. We show rescaled flux tube simulations (where eddies shrink as the relative gyroradius decreases) as well as movies of the self-consistent zonal flows extracted from the full nonlinear simulation.

[1]Work supported by the U.S. DOE under Grant DE-FG03-95ER5409 and additionally by the DOE/OFES Plasma Sciences Advanced Computing Initiative (PSACI) Microturbulence Project.

☐ Prefer Oral Session
☒ Prefer Poster Session

J. Candy
jeff.candy@gat.com
General Atomics

Date submitted: July 12, 2000 Electronic form version 1.4