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## **Turbulent Elasticity and the Physics of Time Delay**

*Wednesday 15 October 2014 14:00 (4h 45m)*

We present a theory of turbulent elasticity—a novel property of drift wave-zonal flow (DW-ZF) turbulence—which follows from the time delay in the response of DWs to ZF. In this work, we: (1) predict and calculate a generic time delay (i.e., a new time scale!) from dynamical first principle; (2) predict zonal shearing wave pattern, in contrast to the dipolar shear layers commonly assumed; (3) calculate the threshold for the onset of limit-cycle-oscillations in the basic predator-prey feedback system, which governs the DW-ZF turbulence. This new insight provides a natural framework for understanding temporally periodic ZF structures in the Dimits shift regime and in the transition from low-confined mode to high-confined mode.

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