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Drift wave and Zonal flow Interaction ROSCOE WHITE, Princeton University, LIU CHEN, University of California, Irvine, FULVIO ZONCA, Associazione Euraton-ENEA, Frascati, Italy — Nonlinear equations for the slow space time evolution of the radial drift wave (DW) envelope and zonal flow (ZF) amplitude within the coherent 4-wave drive wave-zonal flow model of Chen, Liu and White are investigated. The amplitudes are expanded in the set of linear eigenmodes, which reduces the problem to a coupled set of scalar time dependent amplitudes. The competition between linear drive/damping drift wave spreading due to linear and nonlinear group velocity and nonlinear energy transfer between DW and ZF determines the saturation levels of the fluctuating fields. This system exhibits chaotic behavior and itermittency, depending on system size and proximity to marginal stability.

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