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On generation of Alfvénic-like fluctuations by drift wave-zonal flow system in Large Plasma Device experiments[1] C.E. CORREA, W. HORTON, Institute of Fusion Studies, University of Texas at Austin, G.D. CHAGELISHVILI, V.S. AVSARKISOV, J.G. LOMINADZE, Georgian National Astrophysical Observatory, The Chavchavadze State University, J.-H. KIM, J.C. PEREZ, Department of Physics, University of Wisconsin-Madison, TROY CARTER, Department of Physics, University of California, Los Angeles — According to recent experiments, magnetically confined fusion plasmas with "drift wave-zonal flow turbulence" (DW-ZF) give rise to broadband electromagnetic waves. Sharapov et al (2008) report an abrupt change in the magnetic turbulence during L-H transitions in Joint European Torus [P. H. Rebut and B. E. Keen, Fusion Technol. **11**, 13 (1987)] plasmas. A broad spectrum of Alfvénic-like fluctuations appear from $\mathbf{E} \times \mathbf{B}$ flow driven turbulence in the Large Plasma Device (LAPD) [W. Gekelman et al., Rev. Sci. Instrum. **62**, 2875 (1991)]. We present one possible theoretical explanation of electromagnetic fluctuations in DW-ZF systems in LAPD experiments. Fluctuation modes of spectrally stable sheared flows are non-normal. The linear operators of the fluctuations modal analysis are non-normal and the corresponding eigenmodes are not orthogonal. The non-normality results in linear transient growth with bursts of the perturbations and the mode coupling, which causes electromagnetic waves. The transient growth substantially exceeds the growth of the classical dissipative trapped-particle instability.

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