

Abstract Submitted  
for the DPP07 Meeting of  
The American Physical Society

**Identification of the parametric-modulational instability of the drift wave-zonal flow system in a cylindrical magnetized plasma**<sup>1</sup> Y. NAGASHIMA, S.-I. ITOH, S. SHINOHARA, Kyushu University, M. FUKAO, Uji, Kyoto, A. FUJISAWA, NIFS, T. NISHIZIMA, K. TERASAKA, M. KAWAGUCHI, Y. KAWAI, Kyushu University, G.R. TYNAN, P.H. DIAMOND, UCSD, M. YAGI, S. INAGAKI, T. YAMADA, T. MARUTA, K. KAMATAKI, Kyushu University, K. ITOH, NIFS — We present observation of the parametric-modulational instability of the drift wave-zonal flow system in the Large Mirror device of Kyushu University. Linear dispersion relations of observed fluctuations are consistent with theoretical predictions of meso-scale residual zonal flow and micro-scale drift-wave. Oscillation of the zonal flow potential is synchronized at modulations of amplitude, radial wavenumber, and turbulence Reynolds stress per mass density of the drift-wave. The bispectral analysis reveals nonlinear energy transfer from the drift-wave into the zonal flow at a radial location where the zonal flow forms a shear structure. Non-local energy transfer to turbulence via “zonal flow channel” is also discussed.

<sup>1</sup>This work was partly supported by the Grant-in-Aid for Specially-Promoted Research (16002005) of MEXT, and by the Grant-in Aid for Young Scientist (B) (18760637) of MEXT, Japan.

Y. Nagashima  
Kyushu University

Date submitted: 14 Sep 2007

Electronic form version 1.4