

Abstract Submitted
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Drift Wave Turbulence in Helicon High-Density Linear Plasma II: Fluctuation Dynamics¹ Y. NAGASHIMA, S.-I. ITOH, S. SHINOHARA, T. NISHIJIMA, K. KAWAGUCHI, K. TERASAKA, T. YAMADA, T. MARUTA, Y. KAWAI, M. YAGI, (Kyushu Univ., Japan), K. ITOH, A. FUJISAWA, (NIFS, Japan), G.R. TYNAN, (UCSD, USA) — In order to investigate drift wave turbulence and its structural formation mechanism, we have been developing strong turbulence in linear magnetized plasmas. In experiments of the last fiscal year, we have observed a transition process in the drift wave frequency range from weak turbulence (fundamental mode and their higher harmonics coexisting) to semi-strong turbulence (broadband spectra) in the Large Mirror device. In the semi-strong turbulence, fluctuations at spectral peaks propagate in the electron diamagnetic drift direction, and have a poloidal mode number of 3 and an axial mode number of 1-2. Radial wavenumbers of the fluctuations have different signs between center and edge region of the fluctuation profile, indicating wave fronts and/or phases of the fluctuations are modulated. The modulation contributes to Reynolds stress gradient, and we also observed a consistent profile of Reynolds stress gradient. In the poster, we will present details of linear/nonlinear analyses of the turbulent fluctuations, and will discuss about energy transfers between spectral peak and higher frequency fluctuations.

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