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Nonlinear coupling between drift waves and streamers in LMD-U[1] T. YAMADA, S.-I. ITOH, T. MARUTA, Y. NAGASHIMA, S. SHINOHARA, K. TERASAKA, M. YAGI, S. INAGAKI, Y. KAWAI, Kyushu Univ., N. KASUYA, A. FUJISAWA, K. ITOH, NIFS — Recent theories and simulations on drift wave turbulence revealed that the coupling between drift waves should generate streamers. A streamer is radially elongated and poloidally localized structure, therefore, it is expected to enhance the cross-field transport and have large effects on the plasma confinement. However, few streamers have been identified in toroidal and linear plasmas. We applied a 64-channel poloidal probe array to the LMD-U linear plasma in order to investigate poloidal structure of drift wave turbulence, and identify the occurrence of streamer events successfully. Furthermore, two-dimensional (poloidal wave number and frequency) spectra showed broadband fluctuations superposed with a couple of parent modes which satisfy the linear dispersion relation, and many quasi-modes which do not satisfy the dispersion relation. It should be highlighted that the first application of two-dimensional bi-spectral analysis revealed the cascading process from parent drift waves to quasi-modes and broadband components, and the process of a streamer generation.

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