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Zonal Flow Driven by Electron Temperature Gradient Driven Drift Mode in a Linear Magnetized Plasma N. WAKDE, Government P. G. College Narsinghgarh, Rajgarh, MP, S. BOSE[1], Columbia University, New York, R. ROY, P.K. CHATTOPADHYAY, Institute for Plasma Research, HBNI, R. SINGH, Center for Space Sciences and Astrophysics, UC-San Diego, J. GHOSH, Institute for Plasma Research, HBNI — Zonal flow (ZF) is a poloidally symmetric band like shear flow, a secondary mode driven by drift waves, which regulates turbulence and transport. Here, we report observation of ZF driven by electron temperature gradient (ETG) driven drift wave turbulence in a linear machine. A low frequency (0.2-0.3 kHz) mode is identified as ZF by measuring density and potential fluctuations, and radial, poloidal and axial wave numbers. In radius, maxima of ZF amplitudes tracks the minima of the ETG scale length (L_{Te}) on controlled variation of the location of minimum of the later. The theoretical criteria $L_{Te}/L_n < 1.5$ for excitation of ETG driven mode is well satisfied in the experiment. Here, L_n is the density gradient scale length. Electron density fluctuations has a broadband spectrum above 300 kHz which is close to theoretically predicted frequency of ETG driven mode. Bicoherence analysis shows coupling of ZF with ETG mode. We have found that ZF becomes stronger when collision frequency is decreased. This further proves that ZF is driven by ETG as ETG driven drift is reactive in nature.

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