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Category Number and Subject:

[ ] Theory [X] Experiment

Multi-field Characteristics and Eigenmode Spatial Structure of Geodesic Acoustic Modes (GAMs) in DIII-D,* G. Wang, W.A. Peebles, T.L. Rhodes, E.J. Doyle, L. Schmitz, L. Zeng, *UCLA*; J.C. Hillesheim, *CCFE*; M.E. Austin, *U. Texas*; Z. Yan, G.R. McKee, *U. Wisc.*; R.J. La Haye, K.H. Burrell, M.J. Lanctot, C.C. Petty, S.P. Smith, E.J. Strait, M.A Van Zeeland, *GA*; R. Nazikian, *PPPL* – Understanding GAMs is important since they are thought to regulate turbulence and transport levels in the outer regions of fusion plasmas. For the first time, two simultaneous, radially-overlapping eigenmode GAMs (constant frequency vs radius) have been observed in the poloidal ExB flow in L-mode DIII-D plasmas. Intermediate-k density fluctuations ($k_\theta * \rho_s \sim 1$) are modified by these GAMs. Multi-field oscillations at the GAM frequency are also clearly observed in n_e, T_e, and B_θ. Magnetic GAM activity is much stronger on the high-field side of the tokamak. This unique information provides a new perspective on GAM activity. Direct comparison with global gyrokinetic simulations (GYRO) will be presented to improve understanding.

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