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. Wis.; 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 ($k_*\rho_s ~1$) are modified by these GAMs. Multi-field oscillations at the GAM frequency are also clearly observed in $n_e$, $T_e$, and $B$. 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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