

Abstract Submitted
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Low Frequency Fluctuations in the Levitated Dipole Experiment¹

J. KESNER, A. BOXER, J.E. ELLSWORTH, MIT PSFC, D.T. GARNIER, M.E. MAUEL, Columbia University — Plasma that is heated by ECRH can be subject to instability that feeds on the free energy of either the hot component or the thermal plasma component. A closed field line confinement system such as a levitated dipole is shear-free and the plasma compressibility provides stability. Theoretical considerations of thermal plasma driven instability indicate the possibility of MHD-like behavior of the background plasma, including convective cell formation and drift frequency (entropy mode) fluctuations. In experiments in LDX (in the supported mode of operation) we create a two-component plasma in which a thermal species contains most of the density and an energetic electron species contains most of the plasma stored energy. In addition to high frequency fluctuations reported elsewhere [Garnier et al., PoP 13(2006)56111] we observe low frequency fluctuations in the kHz range that presumably are driven by the thermal species. The fluctuations become undetectable during strong edge fueling when the density profile broadens. During levitated operation lower fueling rates are required and we will compare the low frequency activity between the levitated and supported modes of operation.

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