Abstract Submitted
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Spatial structure of low-frequency plasma fluctuations in a laboratory dipole experiment[1] J.L. ELLSWORTH, MIT PSFC, R.M. BERGMANN, J. KESNER, MIT PSFC, M. DAVIS, D.T. GARNIER, M.E. MAUEL, Columbia University — Plasma confined in the field of a levitated dipole-like magnet has been shown to undergo a strong, inward particle pinch that leads to centrally peaked density profiles. This pinch may be driven by turbulent transport. Density fluctuations are observed on the interferometer chords. Visible light emission also fluctuates when plasma density fluctuates. In order to better understand the structure of these fluctuations, two 16-channel photodiode arrays have been constructed. They measure the radial and toroidal variations in fluctuations of visible light emission from the plasma. These measurements are chord integrated so a synthetic diagnostic is used to interpret the fluctuation structure. The observed fluctuations fall into three groups: very low frequency ($f \sim 100$Hz) coherent mode with an azimuthal mode number n=0 and large radial extent; low frequency ($f \sim 1$kHz), quasi-coherent, n=1 modes which exhibit different radial structure depending on plasma conditions; and broadband turbulent fluctuations. The structure of the fluctuations for different density profiles will be presented.

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