Abstract Submitted
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Thomson Scattering and Spectroscopy Diagnostics for Low Frequency Turbulence Produced in Dual-wire Implosions[1] CHRISTOPHER PLECHATY, Riverside Research, Beavercreek, OH 45431, ANDY HAMILTON, Sensors Directorate, Air Force Research Laboratory, WPAFB, OH 45433, DANIEL MAIN, NATE ZECHAR, Riverside Research, Beavercreek, OH 45431, VLADIMIR SOTNIKOV, Sensors Directorate, Air Force Research Laboratory, WPAFB, OH 45433 — Low frequency plasma turbulence can be driven by the presence of inhomogeneity in density, temperature, magnetic field, or by velocity shear. Low Frequency instabilities can play an important role in many different types of processes, such as magnetic reconnection [1], plasma structuring in the ionosphere's F-layer [2], structuring of laser-produced plasmas in external magnetic field [3], and anomalous diffusion processes [4] in theta-pinch and Z-pinch plasmas. We plan to carry out experiments at the Air Force Research Laboratory using a pulsed power generator to study two-wire implosions and the generation of the Lower-Hybrid Drift Instability [5,6] in the vicinity of the reconnection region. In this work, we develop the Thomson scattering and visible spectroscopy diagnostics that will be ultimately used to characterize the plasma in these types of experiments. [1] Huba, J. D., *Geo. Res. Let.*, **4**, 125-128 (1977). [2] Huba, J. D., *J. Geo. Res.*, **86**, 829-832 (1981). [3] Plechaty, C., *Astrophys. Space Sci.*, **322**, 195-199 (2009). [4] Sotnikov, V. I., *Sov. Phys. JETP*, **51**, 295 (1980). [5] Mal'kov, M. A., *Sov. J. Plas. Phys.*, **11**, 626-631 (1985). [6] Krall, N., *Phys. Rev. A,* **4**, 2094 (1971).

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