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Magnetic Field Effects on Turbulent Plasmas from Ionizing Shock Waves[1] CHAVIS T. RAYNOR, JOSEPH A. JOHNSON, III, Center for Plasma Science and Technology, Florida A&M University — The effects of weak magnetic fields on turbulent plasmas from normal ionizing shock waves created in an Arc Driven Shock Tube (ADST) are examined. The ADST is discharged at 18kV, and filled with argon gas to pressures ranging from 80 and 160 mTorr. This produces hypersonic shock waves ranging between Mach 60 and Mach 10. An axial magnetic field is created using Helmholtz Coils with strengths ranging from 0 and 500 Gauss. Finally, using Laser Induced Fluorescence, multiple-point ion density measurements enable standard turbulent parameters such as spectral index, turbulent energy, characteristic frequency, and chaotic dimension to be determined as well as direct determinations of local Reynolds stresses. This research is relevant to shock wave studies in both laboratory and astrophysical plasmas as well as fusion plasmas.

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