Abstract Submitted
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Ion Sound Turbulence[1] REINER STENZEL, J. MANUEL URRUTIA, Physics & Astronomy, UCLA — The turbulence created by streaming ions through a stationary plasma is studied. The velocity of the streaming ions is selected via a biasing voltage. In situ probes are used to measure the local and time-varying plasma parameters, ion distribution functions, and the turbulence itself. Density fluctuations are recorded in time and space, Fourier transformed into frequency space, and cross-correlated in space. The fluctuations are identified as ion sound modes and their growth rate is shown to depend on the beam energy. The interaction of density fluctuations with electromagnetic waves is investigated. Strong scattering of electromagnetic signals is observed when the wave is guided by a transmission line through a turbulent plasma. The effect is enhanced by forming a transmission line resonator and applying frequencies on the slope of the resonance curve. This suggests a possible method to eliminate the modulation of a high frequency signal by plasma turbulence.

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