

Abstract Submitted
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Electron-ion hybrid instability study in a linear magnetized plasma column¹ AMI DUBOIS, IVAN ARNOLD, EDWARD THOMAS, Auburn University — A new, dual plasma experiment has been designed for the Auburn Linear Experiment for Instability Studies (ALEXIS). Using the 170 cm long and 10 cm diameter magnetized plasma column, a new investigation has been performed of a regime of instabilities that occur when a highly localized, radial electric field with a scale length that is much less than the ion gyro-radius but greater than the electron gyro-radius is generated in the plasma. Under these conditions, this localized electric field is expected to have little effect on the ions, but the electron trajectories will be modified. This can give rise to an electron-ion hybrid (EIH) instability, which produces a broadband wave spectrum in the lower hybrid frequency range. This work is focused on the conversion of electrostatic to electromagnetic wave modes generated by sheared electron flows. Measurements of high frequency electrostatic fluctuations in the lower hybrid frequency range will be discussed and compared with theoretical dispersion relation calculations.

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