

Abstract Submitted
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Coherent and Turbulent Fluctuation Dynamics in a Linear Magnetized Plasma with Biasing TIFFANY DESJARDINS, MARK GILMORE, University of New Mexico, DUSTIN FISHER, Dartmouth College, JOSE-MIGUEL REYNOLDS-BARREDO, University Carlos III de Madrid — The Helicon-Cathode (HelCat) Device at the University of New Mexico is a linear plasma device that exhibits a wide range of plasma dynamics. HelCat has intrinsic fluctuations that vary from coherent to fully turbulent, depending on variables such as magnetic field strength, source power, and neutral background fill. In addition, biased grid and ring electrodes are found to strongly affect the fluctuation dynamics. A detailed study of the transition from a coherent state to a fully turbulent states with the variation of operating parameters and electrode bias is underway. It is seen that with increased magnetic field, fluctuation mode and character changes, and the plasma may become chaotic, before becoming turbulent. With biasing, it is possible to fully suppress instabilities and in some cases excite new ones. In addition to experimental measurements, a linear eigenmode solver is used to accurately identify the instabilities present. A basic overview of results and analysis will be presented.

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