

Abstract Submitted  
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**Results of Electrode Biasing on Flow and Turbulence Dynamics in a Large Scale Helicon Plasma**<sup>1</sup> TIFFANY HAYES, MARK GILMORE, SHUANGWEI XIE, LICAN YAN, University of New Mexico, JOAQUIM LOIZU, PAOLO RICCI, CRPP/EPFL — Experiments are being conducted in the linear HelCat device, using a helicon source and both concentric ring and grid electrodes to bias the plasma. The goal of these experiments is to affect flow profiles and intrinsic turbulence in a controlled manner. Biasing is found to affect both azimuthal and parallel flows, which exhibit complicated changes. Biasing can also partially or fully suppress intrinsic fluctuations, indicating a change in the dynamics of the system. The parallel flow is downstream in the center of the plasma, but exhibits a return flow at the edge. With positive biasing, the return flow reduces as the fluctuations and associated transport are reduced, seeming to indicate that the return flow may be driven by turbulent radial transport. A linear stability analysis code is being used to further understand the instabilities at work, and a 1D3V PIC<sup>2</sup> code is being used to improve the understanding of the effects of biasing on the plasma potential.

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