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Analysis of Helimak Plasma Using Movies of Density Contours CHAD WILLIAMS, KENNETH GENTLE, The University of Texas at Austin, BO LI, Peking University — Using an array of Langmuir probes we have created two-dimensional contour plot movies showing the arrangement, convection, and time sequence of plasma structures inside of the Texas Helimak, which approximates aspects of the tokamak SOL. These structures are seen to vary with time, magnetic field line pitch, and applied bias voltage. The probes are distributed in two sets of 48 probes arranged in a grid with two centimeter spacing, providing good spatial resolution of these structures. We find that, for negative biases, the plasma moves away from the biased plate in agreement with the simulations. For positive biases, the plasma is found close to the bias plate. Positive biases are seen to induce more radial convection than the negatively biased case. While all structures vary with time, those at lower magnetic field line pitch are seen to vary most dramatically.

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