

Abstract Submitted  
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**Bias voltage effects on plasma turbulence reductions in the Helimak: simulation and experiment**<sup>1</sup> BO LI, BARRETT ROGERS, Dartmouth College, PAOLO RICCI, CRPP-EPFL, KENNETH GENTLE, University of Texas at Austin — The Helimak produces toroidal plasmas with open helical field lines and allows for a controlled study of the relation between flow shear and turbulence in a simple geometry with good diagnostics. Above a threshold in applied bias voltage, the turbulence amplitude is reduced and the radial profiles of the flow velocity and shear are modified. Here the bias observations are simulated numerically with a two-dimensional electrostatic fluid model that evolves the full radial profiles of plasma density, potential and electron temperature. The spatial structures of the density, temperature, potential, flow shear, radial particle transport, and density fluctuation amplitude for the biased and unbiased states are presented. The physical implications of the observations in the simulation and experiment are discussed.

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