

Abstract Submitted
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Hybrid Modeling of Alfvén Wave Propagation in a Helicon Plasma Source¹ J. ELFRITZ, A.K. HANSEN, M. GALANTE, S. HOUSHMAND-YAR, S. SEARS, E.E. SCIME, West Virginia University Department of Physics, P. GARY, D. WINSKE, Los Alamos National Laboratory — A 2D hybrid fluid-PIC code is used to study the propagation of Alfvén waves from the low density edge to the high density central axis of a helicon plasma source. We will present the results from simulations that include reflecting boundary conditions and realistic plasma parameters. Waves are launched both internally and externally. For the internal excitation case, waves are launched from a ring antenna immersed in the plasma. The simulation results are compared to recent experiments in which internally launched waves were ducted along the high-density plasma core and mode converted from compressional waves into shear waves. In the case of externally launched waves, an $m=1$ coil placed at the plasma edge is used to excite shear waves in the edge. We will present simulation results demonstrating wave reflection and coupling to the high density plasma core.

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