

Abstract Submitted
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Helicon wave field measurements in Proto-MPEX¹ JUAN FRANCISCO CANESES, Oak Ridge National Laboratory, PAWEL PIOTROWICZ, University of Illinois Urbana-Champaign, RICHARD GOULDING, JOHN CAUGHMAN, MISSY SHOWERS, NISCHAL KAFLE, JUERGEN RAPP, IAN CAMPBELL, Oak Ridge National Laboratory, PROTO-MPEX TEAM — A high density Deuterium discharge ($n_e \sim 5 \times 10^{19} \text{ m}^{-3}$, $T_e \sim 4 \text{ eV}$) has been recently observed in ProtoMPEX (Prototype Material Plasma Exposure eXperiment). The discharge (100 kW, 13.56 MHz, D2, 700 G at the source, 1e4 G at the Target) begins with a low density plasma with hollow T_e profile and transitions in about 100 ms to a high density mode with flat T_e profile. It is believed that the transition to the high density mode is produced by a “helicon resonance” as evidenced by the centrally-peaked power deposition profile observed with IR imaging on a 2 mm thick metallic target plate. In this work, we present b-dot probe measurements of the radial helicon wavefields 30 cm downstream of the antenna during both the low and high density modes. In addition, we compare the experimental results with full wave simulations.

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