

Abstract Submitted
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Full-wave simulations of lower hybrid wave propagation in the EAST tokamak¹ P.T. BONOLI, J.P. LEE, S. SHIRAIWA, J.C. WRIGHT, MIT-PSFC, B. DING, C. YANG, CAS-IPP, Hefei — Studies of lower hybrid (LH) wave propagation have been conducted in the EAST tokamak where electron Landau damping (ELD) of the wave is typically weak, resulting in multiple passes of the wave front prior to its being absorbed in the plasma core. Under these conditions it is interesting to investigate full-wave effects that can become important at the plasma cut-off where the wave is reflected at the edge, as well as full-wave effects such as caustic formation in the core. High fidelity LH full-wave simulations were performed for EAST using the TORLH field solver [1]. These simulations used sufficient poloidal mode resolution to resolve the perpendicular wavelengths associated with electron Landau damping of the LH wave at the plasma periphery, thus achieving fully converged electric field solutions at all radii of the plasma. Comparison of these results with ray tracing simulations [2, 3] will also be presented.

[1] J. C. Wright et al, Physics of Plasmas 16, 072502 (2009).

[2] C. Yang et al, Plasma Physics and Controlled Fusion 56 125003 (2014).

[3] S. Shiraiwa et al, 21st Topical Conference on Radio-frequency Power in Plasmas, 27-29 April 2015, Lake ArrowHead, CA.

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