

Abstract Submitted
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ICRF sheath BC for fast wave propagation¹ D.A. D'IPPOLITO, J.R. MYRA, Lodestar Research — The formation of rf-sheaths on the boundary surfaces in ICRF-heated fusion devices can cause deleterious interactions which limit the ability to heat and drive currents. Although the ICRF antenna is designed to launch a fast wave (FW), a slow wave (SW) is also obtained due to interaction of the FW with material surfaces in the boundary. Quantitative calculation of the sheath properties can be included in rf codes by means of a sheath BC [D. A. D'Ippolito et al., Phys. Plasmas **13**, 102508 (2006); J.R. Myra et al., Phys. Plasmas **1**, 2890 (1994)]. However, this requires resolving both the long FW (ion) and short SW (electron) space scales in the simulation, and thus high resolution (e.g. see [H. Kohno et al., this meeting.]). Here, we discuss the approach of incorporating an evanescent SW near the wall into the sheath BC analytically, so that the simulation only has to solve the FW equations numerically. An analytic solution then determines the SW field at the sheath-plasma boundary, the sheath width, and the sheath potential.

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