

Abstract Submitted
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RF Sheath BC for ICRF Modeling¹ D.A. D'IPPOLITO, J.R. MYRA, Lodestar Research Corporation, E.F. JAEGER, L.A. BERRY, ORNL, SCIDAC CENTER FOR SIMULATION OF WAVE-PLASMA INTERACTIONS TEAM — An important problem in ICRF heating and current drive is the quantitative evaluation of the nonlinear sheath formation at rf wave contact points with material boundaries. Ion acceleration in the sheaths leads to unwanted impurity generation, parasitic power loss, and reduced heating efficiency. Recently, a boundary condition (BC) was proposed² for rf antenna and full-wave codes to allow self-consistent calculation of the rf fields and sheath voltage. A related BC was tested in plasma processing.³ Here, we discuss applications of the sheath BC to analytic test problems relevant to fusion plasmas and a first attempt at its integration with a 1D full wave code as part of the rf SciDAC project. Prospects for numerical implementation in 2D and 3D antenna and full-wave codes will also be discussed.

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²D. A. D'Ippolito and J. R. Myra, Lodestar Report #LRC-06-108 (2006).

³E. F. Jaeger, L. A. Berry, J. S. Tolliver, and D. B. Batchelor, Phys. Plasmas **2** 2597 (1995).

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