Abstract Submitted
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Plasma Sheath and RF Wave Interaction in Tokamaks DANIEL RICHMAN[1], University of Rochester, JOHN WRIGHT, MIT Plasma Science and Fusion Center — This project is part of recent efforts to theoretically and computationally model the radio frequency (RF) heating of tokamak plasmas. The antenna and containment vessel surface have important effects on the heating efficiency of the RF waves. Power loss in the sheath that forms at the edge of the plasma is a primary concern. The magnetic field topology at the vessel surface is important for nonlinear absorption mechanisms. We used archived data from the Alcator C-Mod tokamak at MIT, and prepared it through IDL and Fortran procedures to be used as a boundary condition at a simulated vessel wall in the TORIC code that simulates RF wave propagation in a tokamak. The code was run in an iterative fashion to address the nonlinearity of the situation and achieve a self-consistent solution for power deposition and sheath width, as described in [D. D'Ippolito and J. Myra, Phys. Plasmas 13, 102508 (2006)]. Conclusions could then be drawn regarding the locations of high power loss.

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