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Study of Fast Wave Coupling Through the DIII-D Edge Plasma Using the AORSA Full Wave Code[1] P.M. RYAN, D.L. GREEN, E.F. JAEGER, J.M. CANIK, N. COMMAUX, S.J. DIEM, G.R. HANSON, Oak Ridge National Laboratory, R.I. PINSKER, General Atomics, J.C. HOSEA, A. NAGY, R.J. PERKINS, G. TAYLOR, Princeton Plasma Physics Laboratory — The AORSA full wave code has recently been extended to include the edge plasma in its solution domain and has been applied to the calculation of 30 MHz high harmonic fast wave power coupling and propagation in NSTX experiment [1]. A similar analysis is being carried out for the Fast Wave system used for central electron heating and current drive on DIII-D. Two of the three 4-strap arrays in DIII-D are identical and typically operate close to 90 MHz; the third differs in its geometry and runs at 60 MHz. Power coupling through and propagation within the edge plasma are being analyzed as a function of the plasma outer gap, edge density profile, and array operating frequency and spectra. Although the uniform grid-meshing scheme imposes limits on the fine structure resolution of the antenna geometry, the consequences of shape mismatching between the current strap surfaces and the plasma's last closed flux surface can be evaluated.

[1] D.L. Green, *et al.*, Phys. Rev. Lett. **107**, 145001 (2011).

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