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Fast wave power flow along SOL field lines in NSTX[1] R.J. PERKINS, R.E. BELL, A. DIALLO, S. GERHARDT, J.C. HOSEA, M.A. JAWORSKI, B.P. LEBLANC, G.J. KRAMER, C.K. PHILLIPS, L. ROQUEMORE, G. TAYLOR, J.R. WILSON, PPPL, J.-W. AHN, T.K. GRAY, D.L. GREEN, A. MCLEAN, R. MAINGI, P.M. RYAN, ORNL, E.F. JAEGER, XCEL Engineering, S. SABBAGH, Columbia University, NSTX TEAM — On NSTX, a major loss of high-harmonic fast wave (HHFW) power can occur along open field lines passing in front of the antenna over the width of the scrape-off layer (SOL). Up to 60% of the RF power can be lost and at least partially deposited in bright spirals on the divertor floor and ceiling [1,2]. The flow of HHFW power from the antenna region to the divertor is mostly aligned along the SOL magnetic field [3], which explains the pattern of heat deposition as measured with infrared (IR) cameras. By tracing field lines from the divertor back to the midplane, the IR data can be used to estimate the profile of HHFW power coupled to SOL field lines. We hypothesize that surface waves are being excited in the SOL, and these results should benchmark advanced simulations of the RF power deposition in the SOL (e.g., [4]). Minimizing this loss is critical optimal high-power long-pulse ICRF heating on ITER while guarding against excessive divertor erosion.

[1] J.C. Hosea *et al.*, *AIP Conf Proceedings* **1187** (2009) 105.
[2] G. Taylor *et al.*, *Phys. Plasmas* **17** (2010) 056114.
[3] R.J. Perkins *et al.*, to appear in *Phys. Rev. Lett.*
[4] D.L. Green *et al., Phys. Rev. Lett.* **107** (2011) 145001.

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