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**Characteristics for a Langmuir probe intercepting the HHFW RF power deposition spiral on NSTX**[1] J.C. HOSEA, R.J. PERKINS, M.A. JAWORSKI, G.J. KRAMER, R.E. BELL, N. BERTELLI, S. GERHARDT, B.P. LEBLANC, R. MAINGI, C.K. PHILLIPS, L. ROQUEMORE, G. TAYLOR, J.R. WILSON, S. ZWEBEN, PPPL, J-W. AHN, T.K. GRAY, P.M. RYAN, ORNL, S. SABBAGH, Columbia U., K. TRITZ, Johns Hopkins U. — The HHFW RF power deposition spiral on the lower divertor of NSTX has been shown to result from power flow along the magnetic field lines in the scrape off layer (SOL) in front of the HHFW antenna [1]. It is noted in Ref. 1 that instrumented tile currents on the lower divertor exhibit an increase in electron current to the tiles when the deposition spiral is positioned over them. Similarly, a Langmuir probe is found to exhibit electron current at $V_{probe} \approx 0$ (i.e. at the tile voltage) when it intercepts the RF deposition spiral. IV characteristics for this probe are evaluated in an attempt to determine whether RF electric field rectification at the probe or plasma heating away from the probe dominates the RF power deposition on the divertor. The IV data have a limited voltage scan and rather large current perturbations, presumably due to turbulence produced density fluctuations on the divertor plate [2]. Nevertheless, it appears that plasma heating dominates the IV characteristic, which would suggest a non-linear heating mechanism such as the two-stream instability of a current-carrying plasma could be active in the SOL plasma for the RF currents there.

[1] R.J. Perkins *et al., PRL* **109**, (2012) 045001.
[2] R.J. Maqueda *et al., NF* **50** (2010) 075002.

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