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Local effects of biased electrodes in the divertor of NSTX LANE ROQUEMORE, STEWART ZWEBEN, MICHAEL CAMPANELL, BRENDAN LYONS, RICARDO MAQUEDA, YEVGENY RAITSES, FILIPPO SCOTTI, HIRO TAKAHASHI, PPPL — One proposed solution to the problem of high scrape-off layer heat flux in tokamaks is to generate non-axisymmetric convective cells near the divertor plate to modify the local heating pattern [1]. To test this theory, four small rectangular electrodes were installed into the outer divertor plates of NSTX. When the electrodes were located near the outer strike point and biased positively, there was an prompt increase in the nearby probe currents and probe potentials and an increase in the LiI light emission at the large major radius end of these electrodes. When an electrode located farther outward from the outer strike point was biased positively, there was sometimes a significant decrease in the LiI light emission at the small major radius end of this electrode, but there were no clear effects on the nearby probes. These changes are qualitatively consistent with the expected vertical motion due to a convective cell generated by the electrodes. Possible applications of this technique to future tokamaks will be discussed. This work is supported by DOE Contracts DE-AC02-09CH11466.

[1] R.H. Cohen and D.D. Ryutov 1997 *Nucl. Fusion* **37**, 621
[2] S.J. Zweben et al, Plasma Phys. Cont. Fusion **51** 105012 (2009)

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