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Triple Langmuir Probe Circuit Response to Dynamic Loading¹ VIJAY SURLA, University of Illinois at Urbana Champaign, MICHAEL JA-WORSKI, JOSHUA KALLMAN, ROBERT KAITA, HENRY KUGEL, Princeton Plasma Physics Lab, DAVID RUZIC, University of Illinois at Urbana Champaign -Recently, an array of Langmuir probes was installed in the divertor region of the National Spherical Tokomak experiment (NSTX) and has been successfully tested [1]. The array is backed by a custom designed electronics system that allows biasing the probes, collecting the signals, reducing noise and amplifying circuitry and is suited to operate both as a single Langmuir probe and as a triple Langmuir probe (TLP). While the probe data has been useful in understanding the plasma characteristics during steady plasma discharges in NSTX, certain modifications aid interpretation of the transient events ($\sim \mu s$ scale) such as during Edge Localized Modes (ELMs). During high-flux transients, the bias circuit may drift from the nominal values before on-board control circuitry can respond. The details of the circuit, its response to dynamic loading and the resulting impact on signal interpretation is presented. [1] M.A. Jaworski, J. Kallman, R. Kaita, H. Kugel, B. LeBlanc, R. Marsala, and D.N. Ruzic, "Biasing, acquisition and interpretation of a dense Langmuir probe array in NSTX," 18th Topical Conference on High Temperature Plasma Diagnostics, 2010.

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