

Abstract Submitted
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RF Rectification on LAPD and NSTX: the relationship between rectified currents and potentials¹ R J PERKINS, PPPL, T CARTER, UCLA, J B CAUGHMAN, ORNL, B VAN COMPERNOLLE, W GEKELMAN, UCLA, J C HOSEA, M A JAWORSKI, G J KRAMER, PPPL, C LAU, E H MARTIN, ORNL, P PRIBYL, S K P TRIPATHI, S VINCENA, UCLA — RF rectification is a sheath phenomenon important in the fusion community for impurity injection, hot spot formation on plasma-facing components, modifications of the scrape-off layer, and as a far-field sink of wave power. The latter is of particular concern for the National Spherical Torus eXperiment (NSTX), where a substantial fraction of the fast-wave power is lost to the divertor along scrape-off layer field lines. To assess the relationship between rectified currents and rectified voltages, detailed experiments have been performed on the Large Plasma Device (LAPD). An electron current is measured flowing out of the antenna and into the limiters, consistent with RF rectification with a higher RF potential at the antenna. The scaling of this current with RF power will be presented. The limiters are also floated to inhibit this DC current; the impact of this change on plasma-potential and wave-field measurements will be shown. Comparison to data from divertor probes in NSTX will be made. These experiments on a flexible mid-sized experiment will provide insight and guidance into the effects of ICRF on the edge plasma in larger fusion experiments.

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