

Abstract Submitted
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Electron Stored Energy/Energy Confinement Indication of HHFW Surface Power Deposition on NSTX¹ J.C. HOSEA, S. BERNABEI, B. LEBLANC, C.K. PHILLIPS, J.R. WILSON, PPPL, P. RYAN, D.W. SWAIN, ORNL, D. STUTMAN, JHU — Additional Thomson scattering measurements of the electron energy confinement time during and following HHFW pulses for both heating and current drive antenna phasing are being carried out on NSTX in order to confirm the earlier conclusion that the power delivered to the core plasma is reduced considerably for the current drive phasing case as contrasted to the heating phasing case. This result occurs even though the radial deposition of energy into the electrons in the core plasma is noticeably more peaked for current drive phasing (longer wavelength excitation) relative to that for heating phasing (shorter wavelength excitation) as is expected theoretically. Thus it indicates that surface/peripheral damping processes play a more important role for current drive phasing. Many processes are possibly contributing to this “surface” power loss — surface wave excitation, RF sheath dissipation, and parametric decay wave excitation to name a few. Evidence of parametric decay wave heating has been obtained but does not appear to account fully for the difference between the two phasings. The possible contribution of collisional damping of surface waves to the surface power loss will be explored.

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