SOL width scale lengths in NSTX  JOON-WOOK AHN, JOSE BOEDO, UCSD, RAJESH MAINGI, ORNL, VLAD SOUKHANOVSKII, LLNL, HENRY KUGEL, LANE ROQUEMORE, PPPL — The SOL T_e and n_e profiles have been investigated with a mid-plane fast reciprocating probe in NSTX. The SOL plasma consists of two regions; a region close to the LCFS where a steep gradient of the profile is observed (ie near SOL region) and a region further away from the LCFS where a flatter profile is observed (ie far SOL region). It was observed that the near SOL T_e and n_e decay lengths (λ_{Te} and λ_{ne}) became significantly longer in L-mode compared to H-mode (a factor of ∼2 increase in λ_{Te} and ∼3 increase in λ_{ne}). It was found that both λ_{Te} and λ_{ne} in the near SOL decrease with increasing plasma current (I_p) in H-mode (from λ_{Te} ∼3cm to ∼1cm and λ_{ne} ∼2cm to ∼1cm with I_p variation from 0.8MA to 1MA). Near SOL λ_{Te} and λ_{ne} in L-mode increased (λ_{Te} ∼0.7cm to ∼1.1cm and λ_{ne} ∼1.5cm to ∼2.1cm) with increasing line averaged density (from 2.7 to 3.1x10^{13}cm^{-3}) and decreased (λ_{Te} ∼1.7cm to 0.4cm and λ_{ne} ∼1.3cm to 0.5cm) with increasing input power (P_{NBI} ∼1MW to 4MW). A comparison with Thomson Scattering (TS) data shows a reasonably good match for T_e and n_e profiles. This work was supported by U.S. DOE contract # DE-FG02-03ER54731 and DE-AC02-76CH03073.

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