

Abstract Submitted
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Correlation between gun current and ion temperature in SSPX plasma E.D. MEZONLIN, J.B. TITUS, J.A. JOHNSON III, Florida A&M University, Tallahassee, Fl, J.M. MOLLER, E.B. HOOPER, H.S. MCLEAN, B. HUDSON, C.A. ROMERO-TALAMAS, R.D. WOOD, Lawrence Livermore National Laboratory, SSPX TEAM — SSPX diagnostics include ion temperature, T_i , from a Compact Neutral Particle Analyzer, electron temperature, T_e , from Profile Thomson Scattering and time resolved soft X-ray ratios, and electron density, n_e , from CO₂ laser interferometry. We examine the correlations between these parameters and the SSPX gun current, in shots with multiple pulses of helicity injection. The measurements show that any increase in the gun current in an individual shot coincides with an increase in the ion temperature and a decrease in electron temperature and density. We also notice that an increase of helicity injection from shot to shot seems not to affect the ion temperature but influences greatly the neutral flux. This may be due to high gun current, which opens the field lines allowing more ions to escape confinement and then migrate to edge where they can interact with the neutrals. Work supported under the auspices of the US DOE by UCLLNL under contract W-7405-ENG-48.

H.S. McLean
Lawrence Livermore National Laboratory

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