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The Role of Ionization versus Transport in Setting Plasma Density Profiles in LAPD CONOR PERKS, North Carolina State University, SASKIA MORDIJCK, College of William Mary, TROY CARTER, BART VAN COMPERNOLLE, STEPHEN VINCENA, GIOVANNI ROSSI, University of California, Los Angeles — In this paper we study the effects of neutral density variations and turbulence upon the electron density profile on LAPD. Both magnetically confined plasmas for fusion applications as well as astro-physical plasmas have regions that are a mixture of plasma and neutral interactions. LAPD allows us to do experiments to address how the plasma dynamics vary with various neutral pressures and power. In short linear devices, 1D theory gives a good approximation for the plasma density and temperature. Conforming to this model, we do see the general trends predicted such as temperature being set by ionization and therefore generally decreasing with increasing neutral pressure and that density is set by increasing discharge power. In this paper, we will compare the results against the 1D theory and investigate the changes in turbulence and particle flux using probe measurements. Finally, we will expand the 1D theory to include the measured radial transport effects and investigate whether they improve the matches to experimental profile measurements.

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