

Abstract Submitted
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Rotation induced L to H mode transition of a cylindrical plasma column¹ J.E. MAGGS, T.A. CARTER, R.J. TAYLOR, UCLA — The outer region of the plasma column of the LAPD is rotated in a controlled fashion by biasing a section of the vacuum chamber wall positive with respect to the cathode. The plasma column of the LAPD device at UCLA is 17.5 m in length and 60 cm in diameter. A uniform, 400 Gauss axial magnetic field is used in these experiments. Cross-field ion current due to ion-neutral collisions provides the torque to spin up the plasma. In the non-rotating plasma column, cross-field particle transport is measured to proceed at the Bohm diffusion rate. Rotation, above a threshold voltage, suppresses cross-field transport from Bohm to classical rates, leading to steeper radial density gradients. Suppression of radial particle transport is global and not isolated to the region of flow shear.

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