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Formation and dynamics of striations in an annular inductive plasma NICOLAS PLIHON, VICTOR DESANGLES, Laboratoire de Physique, ENS Lyon & CNRS, Lyon, France, PASCAL CHABERT, Laboratoire de Physique des Plasmas, Ec Polytechnique & CNRS, Palaiseau, France — We present an experimental characterization of the dynamics of a low pressure, radio-frequency inductively coupled plasma with an internal coil (resulting in an annular geometry) as described in [1]. At low pressure, the resulting plasma equilibrium is axisymmetric. We show that the cylindrical symmetry of the system is broken at sufficiently high pressure (above 20 mTorr) and low coupled power. In these non-axisymmetric configurations, striations occur along the azimuthal direction. The number of plasma lobes (or striations) increases as pressure increases (from 2 to 7 lobes as pressure increases from 50 to 2500 mTorr). Both stationary and rotating lobes have been observed. The transition between the axisymmetric configuration and non-axisymmetric configurations is shown to be subcritical, resulting in bistability. The transitions between non-axisymmetric configurations with various numbers of lobes are supercritical. High-speed imaging of the emitted light and time-resolved Langmuir probe measurements allow to precisely characterize the dynamics of the lobes, as well as the transitions between configurations.

[1] J. Arancibia Monreal, P. Chabert and V. Godyak, *Phys. Plasmas*, **20**, 103504 (2013)

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