

SYSTEMS AND METHODS FOR FRC PLASMA POSITION STABILITY

Abstract

Systems and methods to that facilitate stability of an FRC plasma in both radial and axial directions and axial position control of an FRC plasma along the symmetry axis of an FRC plasma chamber. The systems and methods exploit an axially unstable equilibria of the FRC to enforce radial stability, while stabilizing or controlling the axial instability. The systems and methods provide feedback control of the FRC plasma axial position independent of the stability properties of the plasma equilibrium by acting on the voltages applied to a set of external coils concentric with the plasma and using a non-linear control technique.

FIGURE 24