

Abstract Submitted  
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**Confinement Regime Transition, Spontaneous Rotation and Phase Velocity Inversion of Edge Modes\*** C. DI SANZO, B. COPPI, M. LANDREMAN, M.I.T. — The transition from the L-confinement regime to the H-regime is associated with the inversion of the phase velocity of collisional ballooning<sup>1</sup> modes excited at the edge of the plasma column and driven by the pressure gradient. Electron-ion, ion-ion and ion-ion neutral collisions are involved in an essential way. The phase velocity inversion from the electron diamagnetic velocity direction (L-regime) to the ion's occurs when i-i collisions and i-n collisions begin to prevail<sup>2</sup> and is very similar to the one found originally,<sup>3</sup> in order to identify collisional electron drift modes in Q-machine experiments. The quality of confinement is associated with the effective rate of expulsion of angular momentum in the same direction as the mode phase velocity, toward the surrounding material wall, and rotation of the main plasma column resulting from recoil.<sup>4</sup>\*Sponsored in part by the U.S. D.O.E.

<sup>1</sup>Coppi, B., et. al., 33rd E.P.S. Plasma Conf., Paper O4.017 (2006)

<sup>2</sup>B. Coppi, MIT(LNS) Report HEP 06/12 and in Paper TH/P6-21, 2006 Intern. Fusion Energy Conf. (IAEA, Vienna)

<sup>3</sup>Coppi, B., H. Hendel, et al., Report MATT- 523 (P.P.P.L., 1967); Intern. Conf. on Phys. of Quiescent Plasmas (Frascati, 1967)

<sup>4</sup>Coppi, B., Nucl. Fusion **42**, 1 (2002)

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