

Abstract Submitted
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Correlation Between Accretion Theory and Spontaneous Rotation Experiments* M. LANDREMAN, B. COPPI, C. DI SANZO, M.I.T. —

The main observations that are consistent with the accretion theory [1] of the spontaneous rotation phenomenon include: i) the reversal of the direction of rotation in the transition from the L- to the H confinement regime that is attributed, by the theory, to the inversion of the phase velocity direction of ballooning modes excited at the edge of the plasma column; ii) the propagation of angular momentum from the outer edge toward the center of the plasma column during the L-H transition; iii) the strong effects of the magnetic field topology of the outermost magnetic surfaces and of the edge plasma regimes on the magnitude and direction of the spontaneous rotation; and iv) the intrinsic connection between spontaneous rotation and the plasma transport properties. The transition in the phase velocity direction of the considered modes is related to that which led [2] to the first experimental identification of collisional drift modes by a (linear) Q-machine where the transition marked the switch-off and on of modes with different mode numbers. A quantitative analysis of the factors that enter the application of the theory to current experiments (e.g. Alcator C-Mod) is given and the developments that this involves are discussed.

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[1] B. Coppi, Nucl. Fus. **42**, 1 (2002)

[2] B. Coppi, H. W. Hendel, et al, PPPL Report MATT-523 (1967)

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