

Abstract Submitted
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**Accretion Theory of the Spontaneous Rotation Phenomenon,
Consistency with Recent Experiments and Edge Blobs Transport Model**

M. LONTANO, CNR, Italy, B. COPPI, M.I.T. — The accretion theory¹ of the “spontaneous” rotation of toroidal plasmas, the first to be based on attributing the source of angular momentum near the edge of the plasma column, has found further support in recent experiments carried out by the Alcator C-Mod² and the D-IIID³ machines. The second basis of the theory involves the intrinsic coupling between spontaneous rotation and thermal energy transport and is consistent with the observation that the variation in the rotation velocity from the L-regime to the H-regime is related to the scaling² for the threshold to attain the H-regime. Theoretically, the analysis of non-symmetric spectra, relative to the sign change of the ratio of the poloidal to the toroidal wave number has been pursued considering travelling modes driven by the ion temperature gradient in the presence of an inhomogeneous toroidal velocity. The idea that blobs formed at the edge of the plasma are responsible for the ejection of the angular momentum toward the surrounding material wall is being pursued in collaboration with Myra et al. (paper at this meeting)

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¹B. Coppi, *Nucl. Fusion* **42**, 1 (2002)

²B. LaBombard, 2005 Sherwood Meeting Paper 03-OTR

³J.S. de Grassie et al., Paper IAEA-CN-116/EX/6-4Rb

B. Coppi
M.I.T.