Abstract Submitted
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Angular Momentum Ejection and Recoil* O. OHIA, B. COPPI, MIT — The spontaneous rotation phenomenon observed in axisymmetric magnetically confined plasmas has been explained by the "accretion theory" [1] that considers the plasma angular momentum as gained from its interaction with the magnetic field and the surrounding material wall. The ejection of angular momentum to the wall, and the consequent recoil are attributed to modes excited at the edge while the transport of the (recoil) angular momentum from the edge toward the center is attributed to a different kind of mode. The toroidal phase velocity of the edge mode, to which the sign of the ejected angular momentum is related, is considered to change its direction in the transition from the H-regime to the L-regime. For the latter case, edge modes with phase velocity in the direction of v_{di} are driven by the temperature gradient of a cold ion population at the edge and damped on the "hot" ion population. The "balanced" double interaction [2] of the mode with the two populations, corresponding to a condition of marginal stability, leads to ejection of hot ions and loss of angular momentum in the direction of v_{di} while the cold population acquires angular momentum in the opposite direction. In the H-regime resistive ballooning modes with phase velocities in the direction of v_{de} are viewed as the best candidates for the excited edge modes. *Sponsored in part by the U.S. DOE. [1] B. Coppi, *Nucl. Fusion* **42**, 1 (2002) [2] B. Coppi and F. Pegoraro, *Nucl. Fusion* **17**, 969 (1977)

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