Abstract Submitted
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Double Interaction Process for the Ejection of Angular Momentum and Relevant Recoil* O. OHIA, B. COPPI, MIT — The explanation of the spontaneous toroidal rotation in the L-confinement regime, according to the "accretion theory"[1], requires the existence of a process ejecting angular momentum at the edge of the plasma column in the same direction as that of the ion diamagnetic velocity. The consequent recoil creates a local source of angular momentum, in the opposite direction, which then is transported from the edge to the center region. The ejection and recoil are described by a double interaction process, similar to that explaining the slide-away regime[2], whereby a single mode interacts at the same time with two particle populations. In this case we assume that a cold and a hot ion populations are present at the edge and are treated as collisional and collisionless, respectively. A temperature gradient (of the cold ions) driven mode ejects hot ions while accelerating them in the direction of the longitudinal mode phase velocity. The cold ions are transported inward and recoil in the (longitudinal) opposite direction. An analytic description of this process is given. The transport of angular momentum from the edge of the plasma column is attributed to a different category of modes such as velocity and temperature gradient (VTG) driven modes involving only the hot population. *Sponsored in part by the U.S. DOE. [1]B. Coppi, *Nucl.Fus.* **42** (2002); [2]B. Coppi, F. Pegoraro, R. Pozzoli, G. Rewoldt, *Nucl.Fus.* **16** 309 (1976).

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