Abstract Submitted
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Origin of Non-diffusive Angular Momentum Transport and Spontaneous Rotation[1] B. BASU, B. COPPI, MIT — The "spontaneous rotation" of axisymmetric plasmas has been confirmed to be connected [1] to the excitation of modes involving the extraction of angular momentum from the plasma column and the recoil of the background plasma in the opposite direction. Since the observed radial profiles of the toroidal rotation velocity are consistent with a transport equation for the angular momentum that is not, in general, of the diffusive type [1], a theoretical model is introduced to identify the modes that can be excited and lead to the presence of an angular momentum "inflow" contrary to the direction of diffusion flow. The considered class of modes involves significant electron temperature fluctuations, as evidenced by the experiments. After analyzing several options, the mode found to be most suitable [2] is a development of the toroidal ion temperature gradient mode [3].

[1] B. Coppi, 2000 IAEA Int. Fus. En. Conf. (Vienna, 2000) Paper TH-P1/17; and *Nucl. Fus.* **42**, (2002) 1.
[2] B. Coppi, B. Basu, P. Montag, L. Sugiyama, T. Zhou, and P. Buratti, Paper presented at the 2014 IAEA Int. Fus. En. Conf. (St. Petersburg, 2014) TH-P7/10; submitted to *Nucl. Fus.*
[3] B. Coppi, M. N. Rosenbluth, and R. Z. Sagdeev, *Phys. Fluids* **10**, (1967) 582.

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