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Angular Momentum of Non-axisymmetric Global Modes in Magnetically Confined Plasmas and in Astrophysics* L. FEI, B. COPPI, MIT — The angular momentum of typical tridimensional modes that can be excited in magnetically confined laboratory plasmas and in astrophysics is evaluated by extending pre-existing theories [1], that are applicable to "conventional" waves. For the former case, pressure gradient driven ballooning modes whose frequencies are larger than their growth rates (e.g. given by two-fluid theories) are considered in view of the transport of angular momentum out of the plasma column produced by them. This is one of the processes that can lead to a spontaneous rotation [2], by recoil, of the plasma column. For the latter case tridimensional spiral modes [3] are considered that can be excited in plasma disk structures around compact objects and transport angular momentum radially away from the radius where they co-rotate with the plasma. This allows for mass accretion toward the central object to occur. Two classes of spirals are considered: those that are radially standing and are unstable and those that are convective and oscillatory in the relevant co-rotating frame.*Sponsored in part by the U.S. D.O.E.
[1] B. Coppi, M.N. Rosenbluth and R.N. Sudan, *Ann. Phys.* **55**, 2; 207-248 (1969).
[2] B. Coppi, *Nucl. Fus.* **42**, 1 (2002).
[3]B. Coppi, Paper P1.177, E.P.S. Inter. Conf. (Crete, Greece, 2008).

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