Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Physics of Plasma Accreting Structures* F. ROUSSEAU, E.N.S., Paris, B. COPPI, MIT — Plasma accretion is considered to take place within thin differentially rotating structures, (sequence of density rings[1]) in the prevalent gravity of a central object where the vertical confinement is provided by the Lorentz force associated with internal toroidal currents. The factors that are needed to complete the solution of the equations[1] that describe "ring configurations" are identified and included in the relevant analysis. The relationship between poloidal flows and "seed" magnetic fields is uncovered and analyzed[2]. The significance of the symmetries of the poloidal currents that are found to be associated with the presence of an effective viscosity is pointed out. The problem of having a radial inflow velocity in a two-dimensional configuration with internal currents has been dealt with in the limit of very small "seed" magnetic fields by finding a narrow family "open" magnetic surfaces on which the plasma can spiral toward the central object[2]. *Sponsored in part by the US D.O.E.

[1]B. Coppi and F. Rousseau, *Ap. J.*, **641**, 458 (2006)
[2]B. Coppi and F. Rousseau, Paper O4.034, Proceedings of the 2007 E.P.S. Conference on Plasma Physics and MIT-LNS Report 07/06

B. Coppi
MIT

Date submitted: 20 Jul 2007 Electronic form version 1.4