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) 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 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. 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. *Sponsored in part by the US D.O.E.