Differentially Rotating Structures and Angular Momentum Transport in the Prevalent Gravity of a Central Object* F. ROUSSEAU, E.N.S., B. COPPI, MIT — The presence of angular momentum transport associated with an accretion process in an axisymmetric differentially rotating structure affects the equilibrium configuration that this can take and can introduce a toroidal Lorentz force with the associated poloidal current densities. All three components (vertical, radial and toroidal) of the total momentum conservation equation are considered. A sequence of ring solutions[1] can be found by making use of the inequalities $v_{NJ} < c_s < v_\phi$ where v_ϕ is the rotation velocity, c_s is the sound velocity and v_{NJ} is a velocity related to the difference between the outward transport velocity of angular momentum transport and the inward accretion velocity. The outward angular momentum transport is considered as resulting from processes involving smaller scale lengths than those characterizing the described equilibrium configurations. *Sponsored in part by the U.S. DOE.

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