

Abstract Submitted  
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**Importance of Magnetic Field Configurations in the Structure of Self-gravitating Disks** G. BERTIN, Universita di Milano, Italy, B. COPPI, M.I.T., F. ROUSSEAU, Ecole Normale Superieure, France — Magnetic fields created by internal currents have been found to be important in determining the physical characteristics and the geometry of self-gravitating disks in which a plasma component exists and the magnetic field pressure is comparable to the plasma pressure. The relatively strong radial modulation of the plasma density that has been found in the case of accretion disks, where the gravity of the central object is prevalent, indicates that this modulation has a significant effect on the gravity field that is prevalent in self-gravitating disks where the magnetic energy density is significant. The problem of finding the relevant axisymmetric equilibrium configurations requires the solution of three coupled equations: the gravitational Poisson's equation and the non-linear radial and vertical equilibrium equations according to the lines indicated in Refs.<sup>1</sup> and <sup>2</sup>.

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<sup>1</sup>B. Coppi, *Phys. of Plasmas* **12**, 057302 (2005).

<sup>2</sup>B. Coppi and F. Rousseau, M.I.T. LNS Report HEP 05/01, Cambridge, MA, June 2005. To be submitted to the *Astrophysical Journal*.

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