Abstract Submitted
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"Crystal" Magnetic Structure in Axisymmetric Plasma Accretion Disks[1] B. COPPI, MIT — A general class of stationary magnetic configurations that can exist in (thin) plasma accretion disks is identified by solving analytically [1] the coupled non-linear equations that describe the radial and the vertical equilibrium conditions of the disk. These configurations have a "crystal" structure characterized by a sequence of pairs of toroidal current filaments that can involve nul points of the poloidal magnetic field. The obtained solutions are valid in the limit where the magnetic energy density is smaller than the thermal energy density ($\beta > 1$). In view of studying magnetic disk configurations for which jets can emerge, and for which the limit where $\beta \sim 1$ is important, the relevant equilibrium equations are derived and their symmetries are pointed out. In the limit where the toroidal current densities are weak and a linearized approximation can be adopted, the resulting equilibrium configuration becomes that described by the presence of a marginally stable axisymmetric ballooning mode [2].
[1] B. Coppi, M.I.T.-LNS Report HEP 04/09, to be published in Phys. of Plasmas.
[2] B. Coppi and P.S. Coppi, *Phys.Rev. Lett.* **87**, 051101 (2001) and B. Coppi and E.A. Keyes, *Ap. J.* **595**, 1000 (2003).

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