

Abstract Submitted
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High Energy Plasmas Associated with Black Holes at “Near” and “Far” Distances* BRUNO COPPI, MIT — The radiation emission from Shining Black Holes is most frequently observed to have non-thermal features. Therefore, relevant collective processes in plasmas surrounding or emanating from black holes and containing high-energy particles with non-thermal distributions in momentum space are considered. The case where significant temperature anisotropies are present is analyzed. In plasmas close to black holes[1] these anisotropies are shown[2] to have a critical influence on: a) the existence and characteristics of stationary plasma and field configurations; b) the excitation of magneto-gravitational modes driven by temperature anisotropies and differential rotation; c) the generation of magnetic fields over macroscopic scale distances; d) the outward transport of angular momentum. The γ -ray “bubbles” emerging from the disk of Our Galaxy are connected to a stream of high energy protons emerging from the central massive black hole and to the excitation of plasma modes associated with the non-thermal features of the proton distributions and providing energy to the radiation emitting electron populations. *Sponsored in part by the U.S. DOE.

[1] B. Coppi, *A&A*. 548, A84 (2012).

[2] B. Coppi, MIT-LNS HEP Report 13/01 (2013), submitted *Ap. J.* (2014).

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