

Poster at Splinter Meeting

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REGULAR AND CHAOTIC MOTION IN AN INCLINED BLACK HOLE  
MAGNETOSPHERE

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Circular motion of particles, dust grains and fluids in the vicinity of compact objects has been investigated as a model for accretion of gaseous and dusty environment. Here we further discuss, within the framework of general relativity, figures of equilibrium of matter under the influence of combined gravitational and large-scale magnetic fields, assuming that the accreted material acquires a small (but non-vanishing) electric charge due to interplay of plasma processes and photoionization. In particular, we employ the model consisting of a rotating black hole described by the Kerr exact solution that is embedded in the external large scale magnetic field with arbitrary orientation with respect to the rotation axis. We identify the allowed regions and we also investigate situations when the motion exhibits the onset of chaos. In order to characterize the measure of chaoticness we employ Lyapunov exponents and the technique of recurrence analysis.