

Abstract

EQUILIBRIUM OF CHARGED PERFECT FLUID NEAR BLACK HOLE

Studies of equilibrium of toroidal structures of a perfect fluid are important to understand the physics of accretion disks in various systems (X-Ray binaries, AGN...). Our interest is about equilibrium of electrically charged perfect fluid surrounding a rotating or non rotating compact object, embedded in magnetic field. The vertical and radial structure of the torus are influenced by the balance between the gravitational and the magnetic force. Previous study of rotating charged test fluid around a non rotating black hole showed that according to the spin of the black hole the existence of such structures change. We focus on orbiting structures in the equatorial plane, as single or double tori, and structures above as levitating tori. Our interest is about their existence, shape and how the various forces (electromagnetic, centrifugal and gravitational) influence their physics.