

SPIN EFFECTS ON CHARGED PARTICLE MOTION AROUND MAGNETIZED REISSNER–NORDSTRÖM BLACK HOLES

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Abstract

In this talk, I will discuss the motion of charged spinning particles near a Reissner–Nordström black hole immersed in an external magnetic field. Using the Mathisson–Papapetrou–Dixon framework, we examine how particle spin, electric charge, black-hole charge, and magnetic interaction modify particle trajectories. Special attention is given to the effective potential, stable circular motion, and the innermost stable circular orbit (ISCO). I will also briefly discuss particle collisions near the black hole and how spin and electromagnetic effects influence the center-of-mass energy. The aim of the talk is to introduce students to how gravity, electromagnetism, and particle spin interact in the strong-field region near black holes, and to show how theoretical models can be used to study relativistic astrophysical processes.