ENERGETIC PROPERTIES OF BLACK HOLES IN SCALAR-TENSOR-VECTOR GRAVITY

Bobur **TURIMOV**

Ulugh Beg Astronomical Institute,
33 Astronomicheskaya str., Tashkent, 100052, Uzbekistan
Orcid number: 0000-0003-1502-2053
bturimov@astrin.uz

Abstract

The analysis of the gravitational field surrounding a Kerr-MOG black hole reveals that it possesses a stronger gravitational field, a larger event horizon, and can rotate faster than a standard Kerr black hole due to the influence of Scalar–Tensor–Vector Gravity (STVG). We examined the impact of STVG on the circular motion of massive particles around the Kerr-MOG black hole and analyzed the characteristics of the Innermost Stable Circular Orbit (ISCO) for such particles. The results indicate that STVG significantly affects the efficiency of energy extraction from a rotating black hole, allowing for efficiencies exceeding 100% through the Penrose process. Additionally, we investigated the gravitational synchrotron radiation analogue emitted by a massive particle orbiting a Kerr-MOG black hole and demonstrated that STVG alters the intensity of gravitational radiation from binary systems involving stellar-mass and supermassive black holes.