KERR-MOG BLACK HOLE IMMERSED IN EXTERNAL MAGNETIC FIELD

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The pioneering direct detection of gravitational waves by the LIGO-Virgo collaboration [1] and the first ever observed image of a supermassive BH at the center of the elliptic galaxy M87 by the Event Horizon Telescope (EHT) col- laboration using very long baseline interferometry (VLBI) [2] have made grate impact on development of both theoretical and experimental/observational investigations in relativistic astrophysics. Meanwhile these two discoveries open window to research related to development of new tests of the gravity theories in the strong field regime. General relativity proposed by Albert Einstein has been successfully tested in weak field regime using, e.g. solar system tests [3]. Although the gravitational wave detection [4] and black hole shadow [2] observation justify the general relativity the current resolution of these observations leave open the window for the modified and alternative theories of gravity [5]. Accordingly, the numerous authors have started to develop the theoretical research devoted to study the effects of main parameters coming from the alternative theories of gravity on shadow and optical properties of black holes.

We have also presented the ISCO radius to analyse BH parameters in Fig. 1 which may provide a tool to get information about parameters being responsible for the Kerr family.

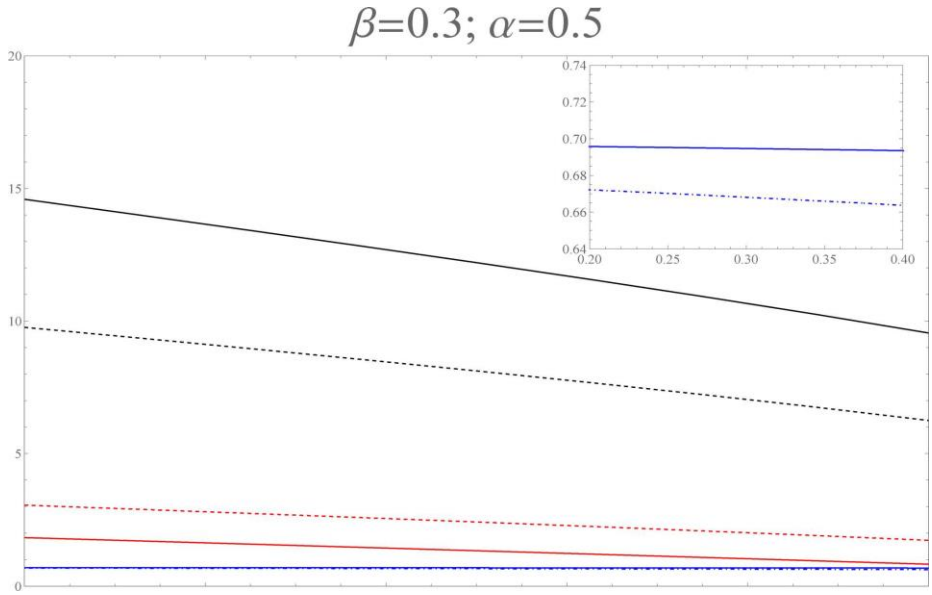

Fig.1 Variation of the horizon radius with increase of black hole spin parameter a for the selected values of parameters b and g, with M=1

The detailed study of horizon structure and the particle motion by Kerr-MOG black hole (BH) is performed. The trajectory of magnetized particle motion in ISCO is found using the solutions of geodesic equation for the motion and effective potential of a particle around rotating Kerr-MOG BH for different values of coupling parameter in Kerr-like spcetime metric.

REFERENCES:

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