



NONSINGULAR BLACK HOLES SOLUTIONS IN $f(G)$ GRAVITY

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Abstract

In this work, we study the possibility of generalizing solutions of regular black holes with an electric charge, constructed in general relativity, for the $f(G)$ theory, where G is the Gauss-Bonnet invariant. This type of solution arises due to the coupling between gravitational theory and nonlinear electrodynamics. We construct the formalism in terms of a mass function and it results in different gravitational and electromagnetic theories for which mass function. The electric field of these solutions are always regular and the strong energy condition is violated in some region inside the event horizon. Imposing the limit of some constant going to zero in the $f(G)$ function we recovered the linear case, making the general relativity a particular case.

keywords: Regular Black Holes; Energy Conditions; $f(G)$ Theory.