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Asymptotically flat black hole solution in modified gravity

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This abstract is primarily based on my paper EPJC 79 (2019) 877.

$f(R)$ gravity theory is one of the most popular alternate theories of gravity, which has been used to describe various phenomena in cosmology and astrophysics. In this talk, I will explore the properties of spacetime in the presence of $f(R)$ gravity. First, I will describe how it is used to obtain a spherically symmetric spacetime metric. It is observed that the properties of the spacetime and some other physics related to the marginal orbits deviate from those for the Schwarzschild metric, depending on the model's parameter. It is also well noted that this solution is actually asymptotically flat, which means the metric approaches the Minkowski metric as we move away from the compact object. Eventually, I will talk about using this solution in the accretion disk to understand its various properties.

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