

Particle's Trajectory Around Static and Spherically Symmetric black hole in Massive Gravity Theory

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We attempt to explain the trajectory of a particle around the massive object using an effective gravitational potential obtained from dRGT massive gravity theory. The dRGT massive gravity is the modification of the Einstein's general relativity (GR) by considering theory with a massive graviton, while in GR the graviton is massless. We start with finding the static and spherically symmetric black hole solutions of the modified Einstein equations in empty space. We found that at small scale, the solution recovers Einstein's gravity with small correction contributed from graviton mass. At large scale, the dominant contribution provides the accelerating expansion of the universe since the graviton mass serves as cosmological constant. The corrections in the solution may provide an opportunity to distinguish the particle motion between massive gravity and GR.

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