

Heat Engine for Black Holes in Presence of Cyclic Thermodynamics Behavior

Tuesday, 28 July 2020 15:55 (25 minutes)

The study of astrophysics context of massive theory leads to the black hole heat engine may be regarded as a possible energy source of the high energy astrophysical phenomena. Therefore, a black hole engine may be regarded as a possible source of power gamma rays and ultrahigh energy cosmic rays. Propose of this research was study to heat engine provided by black holes in presence of cyclic thermodynamics behavior. The main motivation was to investigate the rate of change of the cyclic process based on massive theory leads to the effect as different of the efficiency of black hole engines in massive gravity. It would be interesting to investigate the efficiency calculated on the horizon with these three different topologies were spherical flat and hyperbolic which then make a comparison. The results in this research will be shown that the highest efficiency for the heat engine belongs to black holes with the hyperbolic horizon, while the lowest one belongs to the spherical black holes.

Secondary track (number)

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Session Classification: Astro-particle Physics and Cosmology

Track Classification: 08. Astro-particle Physics and Cosmology