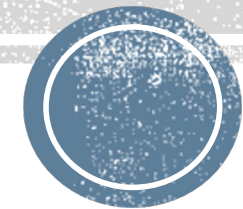


Schwarzschild Black Hole Surrounded by the Dehnen Type Dark Matter Halo

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Abstract: In this work, we give some explanations about Schwarzschild Black Hole, Dark matter and its types and we focus on Dehnen Type Dark Matter to determine a new spacetime. Then we explore the critical parameters that delineate the existence of black holes, identifying the permissible ranges that facilitate their formation. A comprehensive thermodynamic analysis of black holes is conducted, leading to the calculation of black hole remnants. We investigate the trajectory of light, establishing an upper limit for the parameters based on Event Horizon Telescope (EHT) observations of Sgr A*, ensuring that the black hole's shadow resides within the allowed region. Furthermore, we derive the quasinormal modes (QNMs) for both scalar and electromagnetic perturbations.



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