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# Chaotic dynamics around black holes

*Thursday, 10 October 2024 15:48 (3 minutes)*

I will explore the dynamics of objects orbiting black holes, focusing on when these dynamics remain regular and when they transition into chaotic behavior. The phenomenon of chaotic dynamics around black holes presents rich and complex behavior, which I will discuss across various scenarios, including both general relativity and modified gravity theories [1,2]. While point-particle dynamics provide a useful baseline, the emphasis of this presentation will be on macroscopic objects and their unique chaotic characteristics in strong gravitational fields.
Additionally, I will discuss potential observational signatures of chaotic dynamics, ranging from gravitational wave signals to electromagnetic detections, offering insights into how these phenomena might be identified experimentally. This study will cover both theoretical foundations and current proposals for detecting such chaos, aiming to shed light on this captivating aspect of black hole physics.
1. Chaotic dynamics of a spinless axisymmetric extended body around a Schwarzschild black hole. Ricardo A. Mosna, Fernanda F. Rodrigues, Ronaldo S. S. Vieira. Phys. Rev. D 106, 024016 (2022)
2. Chaotic dynamics of pulsating spheres orbiting black holes. Fernanda F. Rodrigues, Ricardo A. Mosna, Ronaldo S. S. Vieira. GRG (2024)

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