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A Morse-theoretical analysis of gravitational lensing by rotating traversable wormhole

Tuesday, 6 July 2021 11:30 (20 minutes)

Consider, in the domain of wormhole, a point p (observation event) and a timelike curve γ (worldline of light source).
We prove that for infinitely many positive integers κ there is a past-pointing lightlike geodesic λ_κ of Morse index κ from p to γ , hence an observer at p sees infinitely many images of γ.

We will show that in the rotating traversable wormhole the occurrence of infinitely many images is intimately related to the occurrence of centrifugal-plus-Coriolis force reversal.

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