

## Simulacija upada sistema povezanih čestica u Kerovu crnu rupu

U ovom radu proučavan je upad sistema povezanih čestica (prostog tela) u Kerovu crnu rupu. Cilj je bio ispitivanje uticaja plimskih sila na deformisanje tela. Trebalo je pronaći idealan slučaj kada su deformacije na telu koje upada minimalne. Pokazano je da su kod supermasivnih Kerovih crnih rupa efekti plimskih sila zanemarljivi, te da su tada deformacije tela minimalne. Ovo znači da bi u teoriji posmatrač mogao da prođe kroz singularitet supermasivne Kerove crne rupe nedeformisan. Ovaj fenomen nije potvrđen i za Kerovu crnu rupu prosečne mase koja je takođe ispitivana u ovom radu. U tom slučaju dolazi do poznatog efekta špagetizacije. Naime, telo počinje da se drastično izdužuje u radijalnom, a skuplja u angularnom pravcu.

## Simulation of a System of Infalling Connected Particles in Kerr Black Hole

This paper analyzes a system of infalling connected particles (of a simple body) in a Kerr black hole. The aim was to investigate the influence of tidal forces on the deformation of the body. An ideal case in which the infalling body deformation is minimal needed to be found. It was shown that the tidal force effect in supermassive Kerr black holes is negligible, and thus the body deformation is minimal. This means that, in theory, an observer could pass through the singularity of a supermassive Kerr black hole undeformed. This phenomenon was not confirmed for the Kerr black hole of average mass, which was also analyzed in this paper – the familiar spaghettification effect occurs in the latter case. Namely, the body starts to drastically elongate in the radial direction, while it shrinks in the angular direction.

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