

## Gravitational field of slightly deformed naked singularities

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We derive a particular approximate solution of Einstein equations, describing the gravitational field of a mass distribution that slightly deviates from spherical symmetry. The deviation is described by means of a quadrupole parameter that is responsible for the appearance of a curvature singularity, which is not covered by a horizon. We investigate the motion of test particles in the gravitational field of this naked singularity and show that the quadrupole parameter affects the properties of Schwarzschild trajectories. By investigating radial geodesics, we find that no effects of repulsive gravity are present. We interpreted this result as indicating that repulsive gravity is non-linear effect.

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