Black Hole is hole, which is black

Dmitri Martila

Institute of Physics, Tartu University (2004–2011)[*]

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Abstract

Presented evidence, that Black Hole is the hole. Namely, right behind the black surface (event horizon for non-rotational BH), there is no space nor time. No spacetime. Just as it would be prior to the Big Bang. The first composite image of the Black Hole from the Event Horizon Telescope is another evidence for that, with the resulting correction of the reported mass.

[*]Electronic address: eestidima@gmail.com

I. MY IDEA

What if the Black Hole is actually a hole in space, and right behind the surface (event horizon for non-rotating BH) is there absolutely nothing? There is no time nor space, in my calculations. Well, yes, everyone thinks that such a strange place is only in the very center of the BH, in one singular point (however, they hope that due to hypothetical Quantum Gravity there is some sort of space as well). I argue, that the black surface of the black hole is the edge of our reality and the universe.

Black Hole is surrounded not only by the event horizon but also by the ergosphere. The ergosphere covers the event horizon because it is larger than the event horizon. From the point of view of a stationary observer, the time coordinate turns to zero on the ergosphere surface $d\tau = 0\,dt$. And this means that there is space, but no time. However, this is impossible: space is connected with time. Therefore, there is neither space nor time.

A. Another evidence

We have discovered (experimentally as well) effect A: infinite fast propagation of quantum entanglement of two particles. The second effect is not discovered yet, but I suggest it is present: velocity v of any particle or body is less than the fundamental constant Ω, hereby $|v| < \Omega < c$. Proof: no mass-particle can have light-speed, so there must be the limit Ω (if a particle exceeds this limit it simply vanishes "in thin air", making an exception to the energy conservation law). This is effect B. To make this effect available, there must be the special metric M of the spacetime, where at each point the stationary observer is possible (to measure the velocities of particles). There can not be stationary observers inside the black holes (even behind the ergosphere surface), so there can not be spacetime: any black hole is the actual hole, which is black; black, because of infinite strong gravitational red-shift: any particle would cross the ergosphere surface with light-speed, as the calculation in stationary reference frame has shown to me.

II. THE REPORTS OF MASS OF BLACK HOLE IN THE MIDDLE OF THE GALAXY M87 POINT TO MY THEORY

As shown by Laura, Hawking radiation can stop a star collapse, so there are bodies that are larger than the Schwarzschild sphere but smaller than the neutron star. [3] In this note I give another explanation: the ergosphere is the surface of the Absolute Nothingness (called simply "object" in the following). In that way, we avoid having (hypothetical) negative energy particles in the "Penrose energy extraction process" [1] inside the ergosphere, and we are getting rid of the Hawking information loss paradox at the "bottom" of the ergosphere, i.e., at the event horizon. Is expected then, that such an object is a black hole in the middle of the galaxy M87.

Then not the event horizon is being black, but being black the ergosphere. If the surface of the object is the ergosphere, we can notice that the speed of any falling matter is the speed of light just on the surface of the object (measured by a stationary observer [4]). I have calculated this speed using Ref. [1]. Therefore, there is an effective red-shift, and the surface of the object must be black. Indeed, by definition of ergosphere surface there is $g_{tt} = 0$, and the metric for stationary observer (he has $d\phi = d\theta = dr = 0$) just at the surface reads $d\tau^2 = g_{tt}\, dt^2$, which looks exactly like the cause for the infinite red-shift turning black hole "black".

The Event Horizon Telescope Collaboration judges the mass of the black hole by the size of the black spot in the sky (they called it "shadow"). But if it is the ergosphere black, not the event horizon (because latter is absent for the object, which surface is ergosphere); then judging by the size of the black spot, the mass of "extremal" black hole will be twice times smaller than reported by Event Horizon Telescope Collaboration, because ergosphere surface is twice larger than the event horizon: $r_E = 2\, r_h$.

As a consequence, the mass value $m = 6.5 \pm 0.2 \pm 0.7$ billion solar masses, as reported by the event horizon Telescope Collaboration [5], can be divided by a factor of two to produce the correct mass $M = m/2 = 3.25 \pm 0.1 \pm 0.35$. Therefore,

$$3.25 - 0.1 - 0.35 = 2.8 < M < 3.7 = 3.25 + 0.1 + 0.35\,.$$

This range perfectly agrees with the previous most recent mass determination [6], which was

$$2.8 < M < 4.4\,.$$

However, we have noticed that the precision of our instruments has noticeably grown over the years, $3.7 < 4.4$. The author offers this solution to solve the discrepancies between the results of Refs. [6] and [5].

So again, the Event Horizon Telescope Collaboration reports the mass m of the black hole by measuring the PROPER (not the "visible") size ψ of the black spot in the middle of the Galaxy M87 by the formula: $m = \psi$ in meters. However, the author has presented evidence, that the proper size of the black spot relates to true mass M as $\psi = 2\,M$ for the "extremal" black hole. Because The Telescope sees being black not the event-horizon at $r_h = M$, but the ergosphere at $r_E = 2\,M$. Therefore, $M = m/2$. So, the author suggests renaming the Event Horizon Telescope into "Ergosphere Telescope".

III. HOW TO FALSIFY MY IDEA

The axis of this M87 is directed almost exactly into Earth. Thus, we see this black hole from "above", and so it appears as a spherically symmetric event horizon surface. I hope they will take a picture from another black hole, where the axis of rotation noticeably tilts from the line connecting the black hole and Earth. Then we would see more like the dark ellipse (of ergosphere) than the dark circumference.

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