What atheist Steven Hawking has discovered at all, if Black Holes do not evaporate?

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Abstract

It is the severe scientific criticism against Hawking's life work. One of the issues is the following. The evaporation of the Black Holes is impossible at first because of Steven Hawking's sentence in his original paper that the Schwarzschild Black Hole does not evaporate. We have no other spherical symmetric Black Hole, which would have an event horizon, and what shrinks despite that.

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I. HISTORY OF MY UNDERSTANDING

The evaporation of a Black Hole leads to the Paradox of Information Loss. So maybe Stephen Hawking has made a fatal mistake introducing Hawking Radiation? "Extraordinary claims require extraordinary evidence" (the Sagan standard) was a phrase popularized by Carl Sagan. However, the roots of this phrase are much older, with the French mathematician Pierre-Simon Laplace stating that "...the weight of evidence for an extraordinary claim must be proportioned to its strangeness." The alleged Loss of Information is an absurd consequence of Steven Hawking's extraordinary thesis that "Black Holes do evaporate".

Well, I still do not understand how the Black Hole can evaporate. Black Holes are obtained as the end products of a collapse (in other words: gravitational compression) of supernova matter. However, during the collapse, there is no event horizon. According to Hawking, evaporation does not occur at the most final stage of the collapse of a star, but it performs already during the collapse (according to Ref. [1], black holes disappear during a finite coordinate time, i.e. the Earth's time). This means that pairs of particles and antiparticles appear from the vacuum around the contracting star. I have the following questions:

1. Why does only the particle leave the star, never the anti-particle? The rest-energy (the proper mass) of both particles has a positive sign, as both particles, which are emerged from the vacuum, logically do not belong to the vacuum anymore, i.e. they are non-virtual particles now. Therefore, the gravity should act on them in the same way, and there is no event horizon in the collapsing star spacetime to cut from our world the anti-particle.

2. If an anti-particle falls into a star, matter-antimatter annihilation is accompanied by the impact with the star. Why isn't this annihilation radiation added to the temperature of the Hawking radiation and in general to the spectrum of the Hawking radiation?

3. I do not understand why Hawking applies formulas valid for Black Holes while studying a collapsing star. [1]

II. MY CONTRIBUTION

It is not a secret that the vacuum [influenced by gravity] can produce particles not only in the presence of Black Holes [2].

Steven Hawking tells us [1] that while the star collapse, there is particle production (The "Hawking Radiation"). This happens before the appearance of the event horizon; otherwise, the collapse has been finished. The metric of spacetime in the vacuum outside the collapsing star coincides with the vacuum metric around a static neutron star. Both metrics are static and stationary (time-independent).

The particle production, if it would happen inside the collapsing star (i.e., not outside in the vacuum) is modifying the spectrum of the Hawking Radiation, because the radiation goes through the star layers. However, in Hawking's paper entitled "Particle Creation by Black Holes" the formula for the temperature does not include the parameters of matter; only the mass of the collapsing star, which is the only parameter of the vacuum metric around the star. Therefore, one can conclude that a static neutron star can also be a source for Hawking Radiation.

I remember from Quantum Field Theory that a stationary field cannot produce new particles out of the vacuum. Thus, there should be a fatal mistake in Hawking's paper. Indeed, you can find a critical issue against Hawking's paper by looking at the "Trans-Planckian problem": since the laws of physics at short distances are unknown, some find Hawking's original calculation unconvincing [3–5].

Dr. Unruh, the famous discoverer of the Unruh Effect, has written in the abstract of Ref. [7] that "We present a simple model for stellar collapse and evaluate the quantum mechanical stress-energy tensor to argue that quantum effects do not play an important role for the collapse of astrophysical objects." But his paper and the papers of other researches have one common disadvantage: they are highly mathematical, as the mathematical tools presented are supposed to debunk the flaws (in Ref. [1]). In contrast to this, my present note is completely logical and rigorously scientific, however, without any mathematical expressions.

III. SOLUTION TO THE INFORMATION LOSS PARADOX

Having no Hawking Radiation, we have no Information Loss. The Information Loss in Black Holes is the most severe problem in physics, as mentioned by Dr. Sabine Hossenfelder [6] in her reply to Ref. [8]. The latter paper is showing the absence of the Information

Loss in Black Holes, which is the independent evidence for my note to be correct.

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