

**On the Possible Harm of Photon Reflection by Mirrors and its Physical Justification**

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**Abstract**

There is a large amount of mystical information about mirrors, but it is not the main content of the work performed. It relates to the basics of quantum physics and photonics, in particular, to the processes of reflection of photons by a mirror, as waves of visible light. Understanding these processes provides better opportunities for understanding the material world and for correct conclusions about the use of mirrors in human life, as well as about their biophysical and medical influence and their possible consequences.

Mystical beliefs about mirrors are based on the physical and biological impact on humans. Since they are based on centuries of experience in the use of mirrors, which cannot but have some real basis, therefore their research is needed. If we pretend that the impact of mirrors does not exist, then this is a false principle for unbiased science. Serious scientific work is needed that will allow us to bring certainty to the understanding and state of this problem, which is the purpose of the proposed work. Its scientific novelty is the substantiation of the possible impact of mirrors on the basis of strict physical laws. The impact on human health is always a relevant and important research topic. The proposed research methods are based on the consistency with the real laws of nature and typical methods for comparing the biological characteristics of samples when irradiated with light under various conditions. The new results of the work are based on strict principles of reflection of photon waves by a mirror, which are transformed into antiphotons of the Majorana fermion type. The level of modern knowledge in physics is already high enough to explain previously inexplicable phenomena and effects of the material world. This allows us to explain most of the beliefs about mirrors based on the real laws of physics.

**Conclusion:** The formulation of the problem of studying the influence of mirrors on human life is correct, since it follows from the physical laws of light reflection, in which photons are transformed into antiphotons, the properties of which differ from photons of visible light. Their opposition is confirmed by the change in the direction of the reflected objects from right to left and vice versa. At the same time, harm from mirrors is quite possible and their reasonable and careful use is necessary. The study of the influence of antiphotons on any biological objects does not require large expenses and is recommended for wide implementation.

**Keywords:** Mirrors, Laws of Light Reflection, Photons, Antiphotons, Majorana Fermions, Results of Light Irradiation

**1. Introduction**

There is a large amount of mystical information about mirrors that is not included in the content of the work being performed. It relates to the basics of quantum physics and photonics, in

particular to the processes of reflection of photons as waves of visible light. A complete understanding of these processes provides better opportunities for understanding the material world and for making correct conclusions about the use of mirrors in human

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life, as well as about their biophysical and medical influence and their possible consequences. Among the main mystical beliefs about mirrors, physical, biological and psychological ones can be distinguished. It should be taken into account that the beliefs are based on centuries of experience in using mirrors, which cannot but have some real basis, so their research is needed. Although one can continue to pretend that the effect of mirrors does not exist, and respected scientists in the scientific world do not want to risk their authority (I also risk it) by speaking out on this topic, but this is not a good principle for real and unbiased science. Serious scientific work is needed that will allow us to bring certainty to the understanding and state of this problem, which is proposed in this work.

**The group of physical-biological beliefs includes the following [1]:**

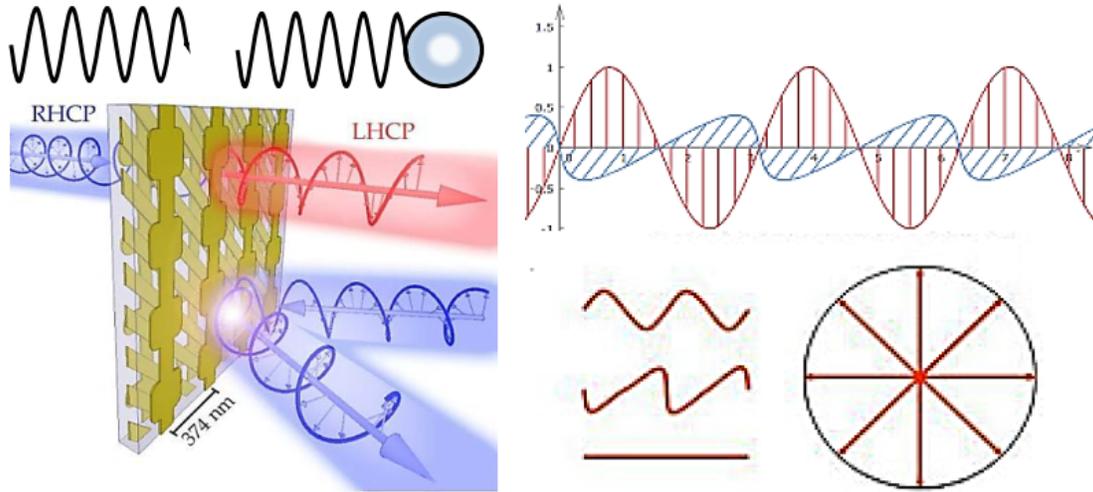
1. Do not eat in front of a mirror, because it can "eat away" positive qualities such as intelligence, health or beauty.
2. Do not sleep in front of a mirror, because it can lead to loneliness in life.
3. Mirrors accumulate the energy of a person who looks into them for more than three minutes, acting as "energy vampires".
4. Scientists have also found (!) that those who often look in the mirror age faster, since the energy field around a person weakens, so he resists the effects of the environment worse.
5. Do not quarrel in front of a mirror, because it has the ability to remember what it sees and the more negativity it records, the more it will later affect the atmosphere in the house.
6. You cannot utter swear words or obscene words in front of a mirror.
7. You can't say negative phrases to your reflection, it can reflect our emotions and return all the negative charge to us.
8. It is not recommended to say your own shortcomings out loud in front of the mirror, do not talk about illnesses, stupidity, misfortunes and suffering.
9. A broken mirror is especially dangerous; it should be thrown away immediately.
10. Through the mirror it is possible to communicate with the other world.

Among psychological factors we can distinguish both positive and negative ones [2]. They can both increase and decrease self-esteem, self-awareness and confidence of a person, understanding of oneself and one's place in the surrounding world. For actors and

dancers, as well as for other people, they are an indispensable factor for positive changes in behavior, including appearance and posture. But they can also lead to unhealthy comparisons and obsession with real and imaginary shortcomings. Complete rejection of a mirror reduces socialization and spiritual closeness with other people and brings a number of inconveniences in everyday life. This list can be continued, but it is related to psychological, not physical and biological aspects of the problem, so they are not considered further in this work. Its goal is to explain the physical basis of the process of light reflection, leading to the formation of mirror images of physical and biological objects, and its scientific novelty consists in substantiating and explaining these processes on the basis of strict physical laws. The impact on human health is always a relevant and important research topic.

**2. Analysis of the State of the Problem within the Framework of the Physical Principles of Mirror Reflection**

The main property of mirrors is their reflection of waves of visible (white) light in the range of 380-760 nm, which results in the formation of images of visible objects. Without these waves, objects will not be visible and there will be no reflections in the mirror. Their color palette is due to the fact that areas illuminated by white light reflect a narrow range of waves and absorb the rest, which forms their color gamut. In this case, the basis for further study is the range of white light, consisting of the entire spectrum of its waves, from infrared to ultraviolet, which is formed by photons. Regarding their nature, there is still a discussion in which the original ideas have changed over several centuries. In the 17th century, light was considered to be particles-corpuscles (Newton), as well as waves, Huygens [3-5]. In the 19th century, after the experiments of Young and Fresnel on the passage of light through cracks and holes, the wave theory gained advantage, which found a complete theoretical basis in the works of Maxwell [6-8]. But after the works of Professor Lebedev on light pressure, Einstein on the photoelectric effect and the Compton effect on scattering, particles appeared again in the theory of light, which became a controversial issue until it was solved by the principle of dualism in the works of De Broglie [9-12]. Traditionally, photons of light and their movement are depicted as a wave in the form of a continuous sinusoid in two polar directions, or a spiral, and as a physical particle, a photon was depicted as a ball, which was later abandoned, within the framework of the theory of its masslessness and existence only when encountering an obstacle [13,14].



**Figure 1:** Traditional Concept of a Photon, the Movement of Its Waves and Their Transformation When Encountering an Obstacle.

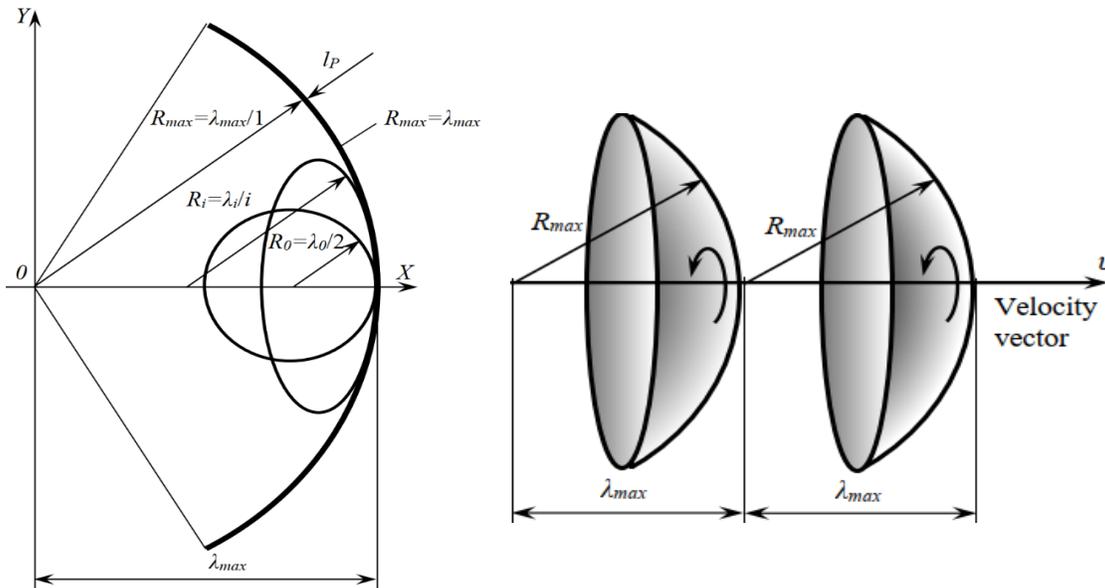
However, the continuity of spiral and sinusoidal wave structures contradicts Planck's energy law (1), in which the wave is formed by quanta, within the framework of a constant intermediate value  $h$  (2) and the frequency of its oscillations  $\nu$  [15]:

$$E = h\nu, \tag{1}$$

where  $h$  – Planck's constant [16]:

$$\begin{aligned} h &= 6.62607015 \cdot 10^{-34} \text{ (exactly) } J \cdot s \\ &= 6.62607015 \cdot 10^{-34} \text{ (exactly) } \frac{kg \cdot m^2}{s}, \end{aligned} \tag{2}$$

In the work [17] this drawback was eliminated by moving to the quantum structure of waves formed taking into account the relativistic  $\gamma$ -factor of Lorentz. In their framework, a photon, upon reaching the speed of light  $c$  in flight, is transformed into a spherical wave, which in the cross section is compressed to the Planck length  $l_p$  (3), and along other directions expands to a sphere of 1 steradian of radius  $R_{max}$ , equal to the wavelength  $\lambda_{max}$  [17-19].



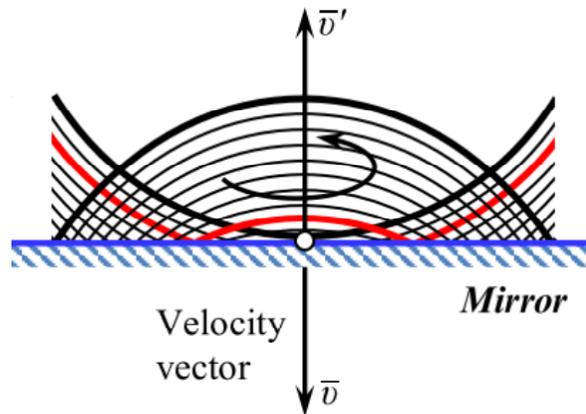
**Figure 2:** Scheme of Formation of Quantum Waves of Ballistic Photons within the Framework of the Lorentz  $\Gamma$ -Factor.

$$l_p = \sqrt{\frac{hG}{c^3}} = \sqrt{\frac{6.62607015 \cdot 10^{-34} \left(\frac{kg \cdot m^2}{s}\right) \cdot 6.67430 \cdot 10^{-11} \left(\frac{m^3}{kg \cdot s^2}\right)}{\left[0.299792458 \cdot 10^9 \left(\frac{m}{s}\right)\right]^3}} \quad (3)$$

$$= 0.405135 \cdot 10^{-34} (m),$$

G – gravitational constant:  $G = 6.67430(15) \cdot 10^{-11} \frac{m^3}{kg \cdot s^2}$ . [16],  
 c – speed of light in a vacuum:  
 $c = 0,299792458 \cdot 10^9$  (exactly)  $\frac{m}{s}$ , [16].

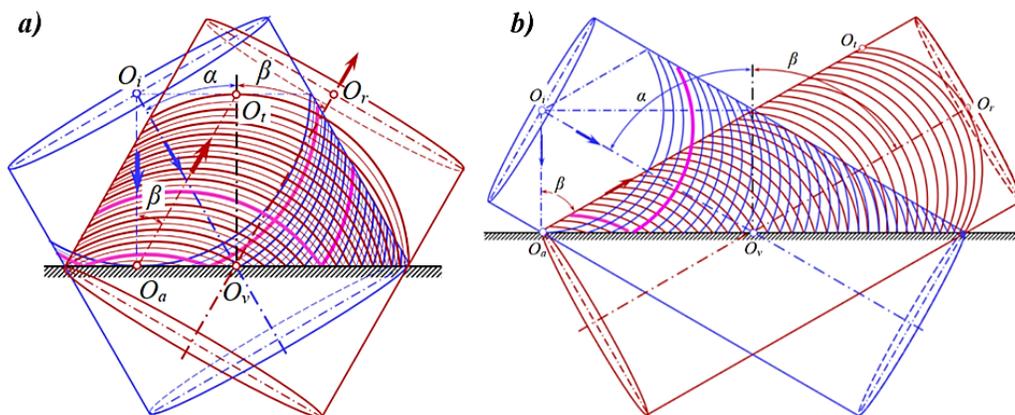
The conclusion that a photon in flight at the speed of light degenerates into a wave, and when it slows down it becomes a particle, corresponds to the general characteristics of the manifestation of dualism, in which wave properties increase with an increase in the speed of movement, and with a decrease in speed, the properties of a substance are more pronounced [20]. On this basis, in a model of a new process of reflection of photon waves during their perpendicular incidence to a mirror was proposed, in which the 1st point of contact with the surface is the point of maximum convexity of the waves, and then they begin to turn “inside out”, as shown in red for an individual wave.



**Figure 3:** Schematic Diagram of Direct and Reflected Interaction of a Spherical Photon Wave with a Mirror.

With such a turn inside out of the wave, an antiphoton is formed, since the rotation of the wave remains the same, and its vector of motion changes to the opposite  $v'$  [17]. The antiphoton does not change charges, which is typical for charged particles and antiparticles, or change the magnetic moment, but only the spin changes. Therefore, they can be classified as Majorana fermions,

as particles paired with their own antiparticles [20]. This model is the main distinguishing feature of the proposed process of antiphoton appearance from previously known ones, which are based only on other conditions of their appearance [20]. Similar formation of antiphotons, as a turn inside out of the wave, occurs at any angles of their incidence and reflection [21].



**Figure 4:** Geometric Models of Incidence and Reflection of Photon Waves: a) At Angles of Incidence and Reflection  $A = B = 30^\circ$ , b)  $A = B = 1$  Rad.

All photons reflected from the mirror are Majorana antiphotons, which confirms the visible change in the mirror of the direction of the shape of objects from right to left or vice versa, while all

other material properties and characteristics of the photons do not change.

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The **research methods** of photons and antiphotons are based on the consistency with the real laws of nature; methods for studying their action are based on typical methods for comparing the biological characteristics of samples when irradiated with light under various conditions [20].

### 2.1. New Results of the Work and Their Discussion

The opposite spin of the antiphoton for biological objects can have an analogy of the Rh factor of blood (+) or (-), which are incompatible. But this is only a general analogy, since the human skin does not have such a division, so the antiphoton for it's always has the opposite effect than photons, to which all biological organisms have adapted throughout their evolution. Therefore, the harmfulness of antiphotons can be tested on all biological objects, starting with viruses, bacteria, mold, fruit flies, mice, pigs and other populations convenient for modeling the vital activity of biological species and humans.

Control variants are irradiated with ordinary sunlight or artificial light, and experimental samples - with their mirror image. The top of the hierarchy is people. You can start with solariums, where statistics have already been accumulated. The analogy in wave energy is similar to ordinary sun tanning, the dosage of which is known. Antiphotons have the same negative energy, which is calculated and determined by photometric devices and area of illumination. Similar experiments can be carried out for plants, starting from seed material, their sprouts, leaves and plants as a whole.

Since the complexity of these experiments does not go beyond the traditional schemes, their rapid and widespread implementation is possible. The work being carried out only sets the task of conducting such experiments, since they must be carried out in certified laboratories within the framework of all strict standards for conducting such studies. But there is every reason to believe that the expected results of harm are quite predictable. In the event of obtaining real evidence of the harmfulness of antiphotons, it is possible to analyze the main mystical beliefs about the harmful effect of mirrors.

1. Regarding food. "Eat" positive qualities, such as intelligence, health or beauty:

- It is possible indirectly, since food irradiated with antiphotons will be less useful, and through it - the above factors will manifest.

2. Regarding sleeping in front of a mirror, which can lead to loneliness in life:

- It is difficult to explain this factor within the framework of the laws of real physics, so it is not considered yet.

3. Regarding the accumulation of energy by a mirror from a person looking at it for more than 3 minutes, which acts as an "energy vampire":

- The explanation is as follows: in the work performed, vampirism and "pulling out" of energy are not substantiated, but on the contrary, it is shown that a long return of antiphotons creates weakness in the body.

4. Regarding the fact that frequent looking in a mirror accelerates

aging, since the energy field around a person weakens, and he resists the effects of the environment worse:

- The explanation is the same: at the summation of time, the share of a person's irradiation with antiphotons increases.

5. Regarding quarrels in front of a mirror, (because it has the property of remembering what it sees), and the more negativity it records, the more it will then affect the atmosphere in the house:

-The process of remembering information by a mirror does not yet have a real physical explanation, so it is not considered yet.

6. Regarding the fact that you cannot utter swear words in front of a mirror:

- The conclusion is real, since the energy of emotions and words are real physical waves, a mirror, like any dense surface, reflects sound waves and this echo is anti-waves.

7. Regarding the fact that you cannot say negative phrases to your reflection, since it can reflect our emotions and return all the negative charge to us:

- The conclusion is the same - the energy of emotions and words are waves that are also reflected from the surface of the mirror, so there is a return of anti-waves.

8. Regarding the fact that one should not speak out loud in front of a mirror about one's own shortcomings, not to talk about illness, stupidity, misfortunes and suffering:

- The conclusion is the same - the energy of emotions and words are waves that are also reflected from the surface of the mirror; therefore, anti-waves return.

9. Regarding the fact that a broken mirror is especially dangerous:  
- The conclusion is unambiguous: pieces of a mirror form separate fields of anti-photon waves of the same frequency; therefore, resonant phenomena are possible at their joints, amplifying their energy.

10. Regarding communication through a mirror with the other world:

- This topic is not yet ripe for discussion due to many ambiguities in the essence and explanations of the processes occurring in this case, and only the future development of science can clarify it.

Thus, the level of modern knowledge in physics is already high enough to explain previously inexplicable phenomena and effects of the material world: 7 out of 10 beliefs were explained. However, all these conclusions still require their own research and rejection of them is unacceptable, since the real laws of reflection of light waves show that they can really affect people's health. On this basis it is possible to carry out many dissertations works. After this, we can talk about a scientific discovery, since this work has its main features [22].

### 3. Conclusion

1. The transformation of photons into antiphotons has a real physical basis and does not contradict the known laws of the material world, which allows them to be taken into account in further scientific research.

2. The formulation of the problem of studying the influence of mirrors on human life is correct, since it follows from the physical laws of light reflection, in which photons are transformed into antiphotons, the properties of which differ

from photons of visible light.

3. The study of the influence of antiphotons on biological and botanical organisms is possible within the framework of traditional methods, they do not require large expenditures and are recommended for widespread implementation.
4. The analysis shows that harm from mirrors is quite possible and their reasonable and careful use is necessary.
5. When contacting a mirror, it is better to avoid any form of negativity emotion, especially in words expressions.

### Conflict of Interest

The author has no conflict of interest regarding this study, including financial, personal, authorship, or other, that could influence the study and its results presented in this article.

This work was carried out by the author alone, on his own initiative, on the basis of personal scientific works: [17, 21]. It uses literature sources from open databases, so permission for their publication is not required.

### Data Availability

The manuscript of the article contains all the data obtained as a result of the research.

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