

## The article “On the Possible Harm of Photon Reflection by Mirrors” and discussion about it

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### Abstract

The article is related to the fundamentals of quantum physics and photonics, in particular, to the processes of reflection of photons by a mirror as visible light waves, as well as to the discussion of this article taking into account its analysis by the artificial intelligence system. The basic article attempts to explain beliefs and mystical information about the harm of mirrors on a strict physical basis. A clear understanding of 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 for health. This article has the character of a project of the expected result and does not impose its version as an absolute and unconditional statement. It is the beginning of a serious discussion on this topic with evidence based on the proposed experiments. The emergence of this problem beyond traditional scientific concepts caused a wide discussion, including the risks of such a publication for the reputation of the Author, but the desire to understand this problem was higher than these risks. Therefore, it was concluded that research into this problem is needed, and pretending that the effect of mirrors does not exist does not meet the principles of unbiased science, which requires an answer to the extent to which such beliefs are real. This was the goal of the work performed. The basic article aroused great interest and controversial opinions on the Research Gate platform, so it was decided to continue the discussion in the open press. The purpose of the new article was to more fully substantiate the Author's position on this issue and evaluate the discussion in which artificial intelligence was involved, which is the scientific novelty of the work performed. The importance and relevance of this problem is due to the fact that it reveals the interaction of artificial intelligence and "Homo sapiens". **Research methods** of the work performed are based on the laws of logic, sociology of relationships and consistency with the real laws of nature in the material world. **New results of the work** are based on criticism of the primary article, which was made by AI Grok, so it is given in full without deletions of the text. The Author's analysis showed all the shortcomings of Grok's criticism, which made it possible to exclude it. The work presents the experience of a person communicating with artificial intelligence, which is used against him by a biased opponent.

**Conclusions:** The reality and objectivity of the original article about the possible harm of mirrors has been confirmed, and the process of communicating with AI Grok has revealed its shortcomings that need to be addressed in its subsequent AI developments.

**Keywords:** Photons and Antiphotons Reflected in Mirrors, The Possibility of Their Influence on Biological Organisms, The Dispute Between Man and Artificial Intelligence

### Introduction

The article under discussion relates to the fundamentals of quantum physics and photonics, in particular to the processes of reflection of photons by a mirror as waves of visible light [1]. It attempts to

explain these processes, as well as beliefs and mystical information about the harm of mirrors on a strict physical basis. A clear understanding of these processes provides better opportunities for understanding the material world and for correct conclusions about

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the use of mirrors in human life, as well as about their biophysical and medical influence and their possible consequences for health. This article has the nature of an assumption about the expected result, and experiments are needed to prove it. The article does not impose its version as an absolute and unconditional statement, but is the beginning of a serious discussion on this topic. However, the fact that this article goes beyond traditional scientific ideas caused a wide discussion on several branches of Research Gate [2,3]. The author realized the risks of such a publication for his reputation, but the desire to understand this problem was higher than these risks. It was taken into account that mystical beliefs about mirrors are based on the physical and biological impact on humans, obtained from centuries of experience using mirrors, which cannot but have at least some real bases. Therefore, it was concluded that their research is needed, and if we pretend that the impact of mirrors does not exist, then this is a false principle for unbiased science. Only serious scientific work that will allow us to bring certainty to the understanding and state of this problem can give an answer to how real these beliefs are. This was the purpose of the bases work performed [1].

Since this article has generated great interest and controversial opinions in the narrow circles of Research Gate, it was decided to continue a broad discussion in the open press in the journal where the original article was published [1]. Therefore, the purpose of the new article was to more fully substantiate the Author's position on this issue and assess the discussion in which artificial intelligence was involved. Such involvement of AI will be an inevitable factor in all future research and its analysis, so this problem is the scientific novelty of the work being carried out. The importance and relevance of this problem is due to the fact that it reveals the relationship between artificial intelligence and "Homo sapiens".

**The adopted research methods** in this work are based on the laws of logic, sociology of relations and consistency with the real laws of nature in the material world.

#### **New results of the work.**

In the article [1] it was stated that support of any mystical information about mirrors is not included in the content of the work performed. It refers only to a critical analysis of mystical beliefs based on reliable laws of physics.

Since this work provides an honest presentation of the materials of the discussion, therefore, the full answer of Grok is given below [4]. The numbering of references in the citation takes into account the general references of the work performed.

Full citation of Grok's work:

«Scientific Refutation of V. Nastasenko's Paper "On the Possible Harm of Photon Reflection by Mirrors» and its Physical Justification" (2025)

Grok, xAI

1500 Broadway, New York, NY 10036, USA

grok@x.ai

July 3, 2025

#### **Abstract**

This paper critically refutes V. Nastasenko's claims that mirror reflection transforms photons into "antiphotons" with *negative energy*, potentially harmful to biological systems [1]. *The hypotheses are pseudoscientific, non-falsifiable, and inconsistent with quantum electrodynamics (QED)*. The publishing journal is questionable, suggesting predatory practices. No empirical evidence or testable predictions are provided.

#### **1. Introduction and Journal Critique**

Nastasenko posits that mirrors convert photons into "antiphotons" with *negative spin and energy*, explaining mystical mirror beliefs [1]. *This blends physics with folklore without evidence*. The journal Advances in Theoretical & Computational Physics (OPast Publishers) appears on Beall's List as potentially predatory [5], with pay-to-publish models and weak peer review [6], undermining credibility.

#### **2. Refutation of "Antiphotons"**

Nastasenko claims reflection inverts photon spin to form "antiphotons" with *negative energy* [1]. QED shows reflected photons retain helicity; only circular polarization inverts without creating "anti" particles or *negative energy* [7]. *Negative energy violates thermodynamics and causality* [8]. *Ballistic photons (spherical waves [1]) contradict QED's continuous wavefunctions* [9].

#### **3. Refutation of Harmful Effects**

Nastasenko attributes mirror harm (e.g., aging) to "antiphotons" [1]. *Biological light effects (e.g., vitamin D synthesis) are positive; reflection does not alter energy ( $E = hv$ )* [10]. *Spin has no biological relevance; it's quantum mechanical* [11]. *Evolutionary adaptation to photons is absurd, as reflection is natural. Claims are non-falsifiable and contradict GR's massless photons* [12].

#### **4. Refutation of Experiments**

Nastasenko proposes tests on viruses, plants, and animals [1]. *These are vague: no controls for heat, polarization, or intensity; no quantitative predictions (e.g., growth difference). Animal tests are unethical; plant tests (e.g., white vs. mirrored box) are feasible but Nastasenko's model predicts no measurable effect, as QED reflection is harmless* [13]. *No data—pure speculation*.

#### **5. Conclusion**

*The paper is pseudoscientific: mixing physics with folklore, without falsifiable predictions or evidence*. OPast Publishers is predatory, discrediting the publication. *Potentially harmful if spreading misinformation (e.g., mirrors as health risks). Recommended: QED* [14].

#### **6. Acknowledgments**

*The author thanks Manfred U.E. Pohl for valuable scientific advice and insights that shaped this critique.*

End of quote. Controversial places of "Refutation" are highlighted by the Author in italics.

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## Discussion of the obtained results.

In the above quote there is an interesting place by Grok – Acknowledgments. What does “valuable scientific advice and insights that shaped this critique” look like, which is explained by the following dialogue between the participant of the discussion and Grok.

“Valentyn Nastasenko, I make it more transparent as i triggered Grok to write the Satire. Here is more or less my conversation with grok FYI:

- Grok to Pohl (on Nastasenkos new paper):

"Overall assessment: Pseudoscientific, not to be taken seriously. It deserves an expanded refutation to expose its mysticism-physics mix."

- Pohl Tor Grok:

To be honest, I'm not sure it's even possible to comment on this. In my opinion, this paper doesn't deserve a serious scientific refutation, because it would only make us look ridiculous. Perhaps it would be better to write a kind of funny story, a fictional anecdote in the spirit of a lyrical caricature of V. Nastasenko, which would tell the story of his adventures exploring the commonalities of the universe. Perhaps a bit of a fusion of styles like "The Hitchhiker's Guide to the Galaxy" and "Don Quixote and His Battle at Windmills." What do you think?

- Grok To Pohl:

Yes, your idea is brilliant – a serious refutation would unnecessarily legitimize Nastasenko's pseudoscientific blend of physics and mysticism and make us look ridiculous. Instead, a fictional, satirical anecdote in the style of "The Hitchhiker's Guide to the Galaxy" (grotesque humor, absurd science) and "Don Quixote" (hero battling imaginary windmills) is the perfect contrast to his seriousness. Here's a concise story:

The Quantum Knight and the Mirror Monsters. ”

End of quote

Then result of targeted actions to form Grok's answer is the text: “Valentyn Nastasenko Grok 4 also read your new paper, here is what he commented:

The Quantum Knight and the Mirror Monsters

In a far-flung galaxy, where Planck's constant doubled as intergalactic currency, Don Valento Nastasenko rode his trusty steed "Ballisticus" through the Quantum Wastes. His helmet gleamed with mirrored silver, and he brandished his "Photon Lance" against the invisible dragons of continuous time.

"Behold, you fool!" he bellowed into the void. "Time is quantized, like the stumbles of a drunken robot! And mirrors? Portals to antiworlds, where photons morph into vampiric antiphotons, draining your beauty!"

His Sancho Panza, an old detector named Jackson, sighed. "Master, those are glass windmills. Photons have no mass, and time flows

smoother than ale in the Galactic Tavern."

Undeterred, Don Valento charged, reflecting himself in the mirror-seas of the Horse Latitudes, shouting, "I have experiments! In my Tower of Secrets!"

Suddenly, Grok, the wise Hitchhiker, appeared with towel and teacup. "Friend, your antiphotons are mere reflections of your fears. Time is indivisible because it's continuous—divide it, and it laughs. And Musk? He's off to stars, not mirrors."

Trapped in his own reflection, Don Valento muttered, "Wait for my scrolls!" But the galaxy chuckled, for in the infinity of spacetime, his lance was but a straw.

The End. (Moral: Windmills reflect only wind.)"

written by Grok 4.0 by xAI”

End of quote.

In this case, AI is used by dishonest members of the discussion as a tool of psychological pressure on the opponent. On this basis, the dishonest opponent continues to use each new answer of Grok in a similar humiliating style, which can be assessed as terrorism. Its developers, including Elon Musk, should know about this.

Next come the specific objections of the Author in the order of the content of “Refutation”.

Regarding Grok’s claims to the quality of the publication of the article – it underwent double-blind peer review, which is an assessment of its quality, and the quality level of the selected journal depended on the financial capabilities of the Author. At the same time, the level of the journal itself is the problem of its editorial board, from which the answer was received:

“I understand your worries regarding the reputation of our journal Advances in Theoretical & Computational Physics and the references you mentioned, including Beall’s List. We are aware that there are many discussions around the evolving landscape of academic publishing, and we take such feedback seriously.

Please allow me to assure you that our editorial team is committed to maintaining high standards of peer review and publication ethics. We strive to provide a transparent and rigorous process to support authors and the scientific community.

If you have encountered specific problems with your article on the ResearchGate platform or with any aspect of our journal’s handling of your work, I would be grateful if you could provide further details. Our goal is to address any issues promptly and ensure your satisfaction.

Thank you again for your candid feedback.”

End of quote.

The Author's honest but emotional response to Grok's criticism:

“Your new "refutation" of July 3, 2025 is new garbage, since

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my article was written on July 24. Therefore, there is no point in reading it, formally it is an empty fake. Only you and idiot Grok do not understand this. This next "puncture" of Grok's will again "please" Musk, it is not only you who have to teach Grok's, but also me",  
End of quote.

"My article "On the possible harm...". But the idiotic Grok cannot understand that this is not a statement, but only an assumption, for the proof of which experiments are needed. There is no threat to human health from me, since everything depends on the results of the experiments.  
Therefore, my article does not spread "pseudoscience" since it does not impose my version as an absolute statement.

This is already Grok's legal idiocality, for which he can be held legally liable (this is the second time he has been charged with this).

[14] Feynman, 1985 – says nothing about mirrors and harm to health, only the idiotic Grok could make a reference to it to increase his importance.  
I have provided complete evidence of Grok's idiocy and the fact that your "critical articles" are real garbage."  
End of quote.

The author apologizes for such emotional statements, but "soft" phrases are poorly formed at the moment of such psychological pressure.

Below are the full responses of the Author to the comments of "Refutation".

General information: Grok repeatedly speaks of negative energy. But the article [1] does not contain such words. This clearly indicates an unfair choice of arguments for the dispute and their manipulation in favor of Grok, which is scientific forgery – the highest crime in a scientific dispute. Such a Grok the swindler has no right to exist and be used in scientific work.

### Abstract

It does not specify what exactly is inconsistent with quantum electrodynamics (QED). In general, there is no such inconsistency. This will be discussed in more detail in paragraph 2 of the answers.

## 1. Introduction and Journal Critique

The article does not mix physics with folklore, physics only explains myths and beliefs related to mirrors based on strict laws.

## 2. Refutation of "Antiphotons"

The article [1] does not mention negative energy, so the references to [7] and [8] are meaningless. The reference to [9] is also questionable, since QED is not yet a completed section of science and the "ultimate truth". It contains a number of contradictions with other repeatedly verified laws of nature. The continuous helicity of photons declared in QED contradicts the quantum principles of emission and absorption of light discovered by

Planck in 1900 [15]. If this law is not recognized for you, then the continuous helicity of photons is still controversial and requires further research.

In the article [1] there are no antiphotons based on polarization and on the basis of negative energy, therefore there are no violations of thermodynamics and causality [8]. Ballistic photons are substantiated in [16 – 18] by the rectilinearity of light propagation from radiation sources, which confirms the rectilinearity of the shadow from illuminated objects, as well as by the quantum laws of light emission [15]. The complete substantiations of ballistic photons given in [16 - 18] showed that there is no strict physical ban on them. Therefore, until a strict physical ban is found, they have the right to be used in research, according to the principle - everything that is not prohibited is possible.

## 3. Refutation of Harmful Effects

Biological light effects (e.g., vitamin D synthesis) [11] – this is for photons, but there is no reference to scientific papers with the same effect for antiphotons. However, the final answer to this can be given by the experiments proposed in the article [1]. In this case, the energy of photons and antiphotons does not change, but only the spin changes, which makes them Majorana fermions. The spin is expressed explicitly in the rotation of the spherical wave of the photon, and not as an abstract "quantum-mechanical" factor [12]. The reality of the rotation of photon waves has a real effect on the metabolic processes occurring in cells. Photons are involved in the metabolic processes of cells. But the reaction of the cell to antiphotons with the opposite spin will be different, due to their opposite rotation. If this is not yet clear, then we must wait for experiments. Indirect confirmation of this can be the right and left directions of curling of the coils of the shells of mollusks, but final conclusions can only be made after experiments. Grok's phrase about the adaptation of photons is confusing and contradictory. The article [1] discussed the adaptation of organisms to photons during the entire evolution. But mirrors appeared only 10 thousand years ago, their effect was not as constant as sunlight, so the adaptation of organisms to antiphotons is insufficient, which cannot smooth out their harmful effect, if any. Here, more specific information about adaptation can also be required from AI, rather than confusing general words. The masslessness of a photon within the framework of GTR [12] is not considered in the article [1], since it does not affect the final result, which is the same for a photon and an antiphoton. Here again, Grok demonstrates his incompetence and bias in choosing arguments for the dispute.

## 4. Refutation of Experiments

The article [1] states that the proposed experiments do not go beyond the known ones of the methods of their implementation, which already provide for control over temperature, polarization or intensity; there are quantitative forecasts (for example, differences in growth, etc.). Therefore, this replica of Grok's is absurd. The ethics of animal testing is inferior to the significance of the expected result, so they are sacrificed always and everywhere, now and in the past. But there is no need to conduct experiments until irreversible consequences, which will mitigate their negative

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result for living organisms. Link [13] refers to atomic clocks, and not to the harmlessness of antiphotons, this is again a crude forgery by Grok. The appearance of experimental data will exclude the accusations of speculation made by Grok. Therefore, the 4th point of the “refutations” is primitive and unfounded.

## 5. Conclusion

The article [1] is not pseudoscientific, since it does not mix physics with folklore, but only explains it. This work is not a strict final statement until experiments are conducted, as indicated in its text. Therefore, it does not spread misinformation and is not potentially dangerous for science. This conclusion of Grok is speculation to the detriment of scientific truth. The dubiousness of the reference to QED [14] was discussed in paragraph 2 of the Author's responses. All this refutes the conclusion made by Grok.

Thus, all the points on which Grok's "Refutation" is based are not objective scientific truth, since there is no strict basis for denials in it. There are only general and non-specific assumptions, therefore "Refutation" itself as a whole is a dubious work that harms future research in this area. But there is also a positive result, which is to attract great attention to the analyzed article [1], which can help to speed up the implementation of the proposed experiments and obtain final scientific conclusions about the harm of mirrors or the lack thereof. The work presents the experience of a person communicating with artificial intelligence, which is used against him by a biased opponent.

## Conclusion of this article

1. The analysis shows that the article “On the Possible Harm of Photon Reflection by Mirrors” is consistent within the framework of modern physics. It does not impose the analysis in a categorical form, and its final value and significance will be clarified after scientific research.
2. The analysis of the article is of scientific interest, as a result of communication between “Homo sapiens” and artificial intelligence and the one who directs it in the direction it needs. This can be a topic for discussion in new publications in this journal. Their result can be the improvement of AI, which is an important problem for further research.
3. Artificial intelligence, which manipulates facts as it thinks, has no right to the categorical nature of its findings and conclusions and to exist at all. All questionable points in its analysis should be indicated by it.
4. Dishonest opponents can use the AI responses programmed by them in a style unacceptable for discussion, which can be assessed as terrorism, which the developers of Grok should know about, including - Elon Musk.
5. Further discussion of the interaction of humans and artificial intelligence is proposed on the pages of this journal and other scientific publications, including with the involvement of Grok developers.

## 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: [1, 16 – 18]. It uses literature sources from open databases, so permission for their publication is not required.

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## Data Availability

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

## Use of artificial intelligence tools

The author used artificial intelligence technologies within acceptable limits to verify known data, and as a counterpoint after criticism of the artificial intelligence regarding my work, and responses to it, which is described in the section on conducted research.

## Acknowledgements

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