Consolidating Electromagnetic Waves from Separate Sources

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Abstract

The author of this article published several articles [1], [2], [3], which argue that Electromagnetic (EM) waves from different sources can and do consolidate, contrary to the acceptable notion presented in an article [4] that EM waves from separate sources cannot consolidate.

This article adds further support to the statement that EM waves from separate sources can consolidate, support that everybody can experience, from everyday experience, which can also be recorded on photos. However, as described in articles [1], [2], [3], if EM waves from separate sources do consolidate, this causes paradoxes, which must be addressed.

This additional support, provided by this article, to the statement that EM waves from separate sources can consolidate, still cannot be considered as a complete and full proof that EM waves from separate sources can consolidate, but it provides support to the claim that an experiment as described in article [1] to implement and test such consolidations of EM waves from separate sources, is an important endeavor.

Such an experiment, which can control the various details of such EM waves consolidations, might validate that such EM waves consolidations do occur and hopefully, might also provide explanations to the paradoxes that occur in such EM waves consolidations, hopefully, explanations that agree with the explanations provided in articles [1], [2], [3].

1. Introduction

The author of this article published several articles [1], [2], [3], which argue that Electromagnetic (EM) waves from different sources can and do consolidate, contrary to the acceptable notion presented in an article [4] that EM waves from separate sources cannot consolidate, because that article states: "A one-dimensional wave moving in one direction can have only one source, and there can be only one such wave at a given point, such that wave interference is not a relevant concept here."

The necessary and sufficient conditions for two EM waves, from two separate sources to consolidate are as follows: The two EM waves must meet on a point in space, and after this meeting, continue to travel together on the same line and in the same direction.

This assures the consolidation of these two EM waves, after they meet on a point in space, because EM waves, in their wave facet are traveling Electric and Magnetic fields, and Electric fields, that exist together at the same location in space, annihilate each other fully or partially, or sum up, depending on their polarities, to create a new consolidated field, and the same applies also to Magnetic fields. And because all EM waves travel at the speed of light, if the above-mentioned EM waves continue to travel together in the same line and in the same direction, after they met, the Electric and Magnetic fields of both these EM waves will always exist together in the same locations in space, causing the above-mentioned consolidation to occur continuously, after these EM waves met.

Article [1] presents a description of an experiment, which uses a half transparent mirror, which might implement consolidations of EM waves from separate sources. That experiment describes two EM waves emerging from separate sources, in two separate locations in space. These two EM waves meet on a point on a half transparent mirror and in certain conditions, as described in article [1], after that meeting, consolidate into one consolidated EM wave.

The justification of the statement that the above-mentioned EM waves from two separate sources can consolidate relies also on the claim that half transparent mirrors (or beam splitters) are linear apparatuses. As such, a consolidated EM wave, in the above-mentioned experiment, when that experiment will contain both EM waves, will be the combined outcomes of two implementations of the above-mentioned experiment. In the first of these two implementations of the above-

mentioned experiment only the EM wave that passes the mirror will exist in that experiment. In the second of these two implementations of the above-mentioned experiment only the EM wave that is deflected by the mirror will exist in that experiment. Then, when the above-mentioned experiment will be executed with both EM waves being present in the experiment, the outcome of that experiment will be the combined outcomes of these two previously mentioned experiments, because a half transparent mirror is accepted as a linear apparatus, which will also result in the creation of a consolidated EM wave.

This discussion adds further support to the statement that EM waves from separate sources can consolidate, support that everybody can experience, from everyday experience, which can also be recorded on photos.

2. An Everyday Experience that might Manifest EM Consolidations from Separate Sources

When one looks at a window in the evening, when there is little lighting outside that window, this window performs like a half transparent mirror, because one can see, through that window, the items residing on the other side of the window and a reflection of his face or body, which is reflected from the window, which now performs also as a mirror. This is further described using the schematics in Fig 1 and Fig 2.

Fig 2, below, presents a photo taken when looking outside a window during the evening when there is little light outside. It clearly demonstrates the things that exist outside this window such as houses and it also clearly demonstrates the reflection of the person that took this photo, which stands in front of that window. Fig 1, below, presents a more detailed explanation which demonstrates that what is presented in Fig 2 implies that EM waves from separate sources might consolidate.

However, if Fig 1 and Fig 2 provide further support that EM waves from separate sources might consolidate, support that is presented from everyday experience that can be also recorded on photos, it should also be emphasized, that such EM waves consolidations end up in paradoxes, as described in articles [1], [2], [3].

In Fig 1 the light beam a (which is an EM wave) emitted from the Tree which exists on the other side of the Window passes the Window as light beam a1. In addition to the above, the light beam b emitted from the Body of the person standing in front of the Window, is reflected as light beam b1, which might travel on the same line and the same direction as light beam a1.

Fig 2 demonstrates that many light beams like a1 might meet many light beams like b1, on the same point on the Window, and then, some of these light beams which met each other on the same point, might also continue to travel together on the same line and in the same direction. Thus, many light beams such as a1 and b1 might consolidate into one consolidated EM wave, because if the above does occur, then, any of these two light beams met the required and sufficient conditions stated above to achieve such EM waves consolidations, because these light beams met on a point on the Window and after this meeting, continued to travel together in the same direction and on the same line.

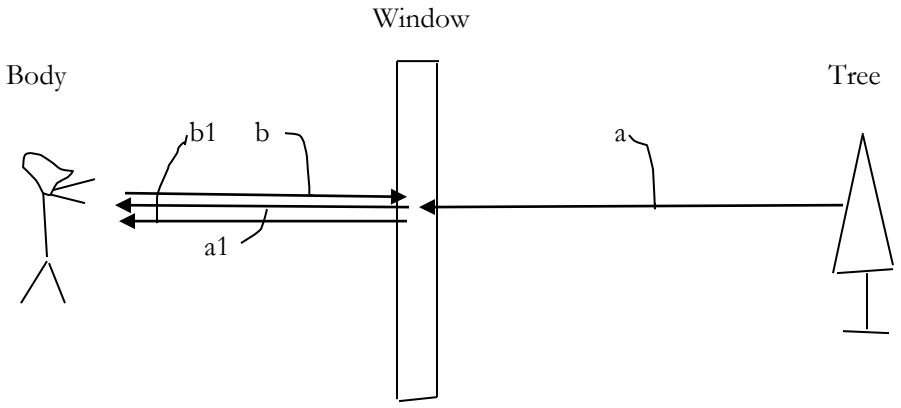

Fig 1

Fig 2

3. EM Consolidations from Separate Sources involve Paradoxes

As already stated above, article [1] proposes an experiment which describes how to create and test such consolidated EM waves. That experiment describes two EM waves emerging from two separate sources, in two separate locations in space. These two EM waves meet on a point on a half transparent mirror and in certain conditions, as described in article [1], after that meeting, consolidate into one consolidated EM wave.

Articles [1], [2], [3] also state that if this experiment is conducted such that the two EM waves mentioned-above hit the half transparent mirror when they have suitable polarization, if a consolidated EM wave does emerge from the half transparent mirror (which is the conclusion that was already derived above), that consolidated EM wave will contain either more or either less traceable energy as compared to the combined traceable energies embedded in the EM waves that hit the half transparent mirror, which is a paradox. Usually, this paradox cannot be detected, because, on the average, no energy is lost or created.

But the experiment described in article [1] can be conducted such that the emerging consolidated EM wave will always contain less traceable energy as compared to the combined traceable energies embedded in the EM waves that hit the half transparent mirror. In such a case the seemingly lost energy had to be dissipated inside the half transparent mirror. Thus, if the test is conducted for a long enough period, this seemingly energy dissipated inside the half transparent mirror should be detected, for example, by detecting a suitable temperature rise of the half transparent mirror body, which should account for the seemingly dissipated energy inside the half transparent mirror during this long period. If such detection will not occur, this might imply that the seemingly lost energy indeed was converted into some untraceable energy, as articles [1], [2], [3] predict, and not dissipated inside the half transparent mirror.

Moreover, and even more importantly, article [3] also indicates that the test, described above, can be conducted such that the emerging consolidated EM wave will always contain more traceable energy as compared to the combined traceable energies in the two EM waves that hit the half transparent mirror. In such a case, if the test will be conducted for a long enough period, such that the source of the extra seemingly traceable energy created cannot be accounted for, this might imply, even more forcefully, that the energy source, of this seemingly extra traceable energy created, is some untraceable energy, again, as articles [1], [2], [3] predict.

The above argumentations might provide additional and important support to the statement that two EM waves from two separate sources can consolidate.

However, this support must be accompanied with additional and proper experiments that will be able to control all the required and necessary details required in order that this test will be accepted as a proof that EM waves from separate sources can and do consolidate. Such a test should also try to explain the paradoxes that are the outcome of such EM waves consolidations. Thus, such experimentation might be a very important endeavor, considering what was already presented in the above discussion.

4. Additional arguments that EM waves from separate sources can consolidate

This section addresses some additional arguments that argue that EM waves which might consolidate do not consolidate, after all. This section provides answers to these arguments which imply that these EM waves should indeed consolidate. These additional arguments addressed are:

1. When two EM waves meet, and following this meeting, these waves are positioned such that they can continue to travel together on the same line and the same direction, instead of continuing to travel together, the EM waves might scatter each other into different directions, like how two billiard balls react when they hit each other, they scatter each other into different directions.

In relation to the argument above, the science of physics does recognize that EM waves have a particle facet which is the photons facet. However, the photons have no mass (and no electric charge), and, as such, when they meet, they cannot scatter each other, as billiards ball do when they meet. The acceptable notion is that EM waves do not interact with each other, and do not scatter each other, even when they meet. Each EM wave passes over any other EM wave as though the other EM wave does not exist, even if they meet or occupy the same location in space. Almost each point in space contains

simultaneously many EM waves, and if these EM waves would scatter or affect each other, then, since light beams are also EM waves, then the visions we would see would be very blurred visions and undistinguished visions. We see clear visions only because all light beams reaching our eyes, move in straight lines, and are not affected, and are not scattered, in their journey to our eyes, by any other light beams that meet them on that journey.

2. When two EM waves meet, and following this meeting, these waves are positioned such that they can continue to travel together on the same line and the same direction, instead of continuing to travel together, these EM waves are absorbed by the media which caused these waves to be positioned such that they can continue to travel together on the same line and the same direction.

In relation to the argument above, if two EM waves meet on a media (such as a half transparent mirror), and these EM waves are affected by that media, such that they are positioned, after that meeting, to continue to travel together on the same line and in the same direction, if instead of continuing to travel together, their energy is absorbed into that media, this should affect the state of that media. In such a case, this should be detectable. For example, in a suitable temperature rise of that media. Since any such media is bombarded continuously by almost an infinite number of EM waves from all directions, an enormous number of these waves, are placed continuously in a situation, as described above, in which their energy in absorbed into that media. Then, that temperature rise, of that media, should be enormously high. Since this does not seem to occur, the argument above, might also seem not to occur.

3. When two EM waves meet, even if the waves are positioned by the media they hit, such that they will continue to travel together on the same line and the in same direction, instead of continuing to travel together and consolidate, these EM waves are converted by the media, into a new EM wave, which is not a consolidated combination of the two EM waves that met on that media.

In the experiment in article [1], which describes how it might be possible to cause EM waves consolidations from separate sources, a half transparent mirror is used. Half transparent mirrors are usually recognized as linear apparatuses.

Thus, if that experiment is first implemented such that only the first EM wave, the EM wave that passes the half transparent mirror, exists in it, and then, the experiment is implemented again, when only the second EM wave, the EM wave that is deflected by the mirror, and continues to travel on the same line and the in same direction on which the first EM wave travels, exists in it, then, the outcome of the experiment, in which both EM waves exist, must result in the creation of a consolidated EM wave.

Because, if a half transparent mirror is a linear apparatus, it implies that the outcome of the experiment in which both EM waves exist, would be a combination of the two outcomes of the two previously mentioned experiments, in which only one EM wave existed, in each of these experiments.

Since in these two previously mentioned experiments, the EM wave, that emerged in each of these experiments, from the half transparent mirror, traveled on the same line and on the in same direction, these EM waves must consolidate into one consolidated EM wave, when they emerge together, from the half transparent mirror, because they then meet the sufficient and necessary conditions for EM waves consolidation, as stated in a previous section of this article.

Thus, if a half transparent mirror is recognized as a linear apparatus, the argument above, which states that in such an experiment the emerging EM wave will not be a consolidated EM wave, cannot be a viable argument.

However, even if the half transparent mirror cannot be accepted as a complete linear apparatus, the argument above, which states that in an experiment, as described in article [1], the emerging EM wave will not be a consolidated EM wave, is a problematic argument, because of the following argumentation:

It is well accepted that EM waves are always deflected from various media (such as a half transparent mirror) according to Snell's law.

Also, in the experiment provided in article [1], the condition to position the two EM waves, after they meet, such that they had to continue to travel together on the same line and in the same direction, and thus consolidate, occurs only if the half transparent mirror is tilted at exactly 45 degrees. In any other tilt position of the half transparent mirror, the two EM waves, emerging from the half transparent mirror, will not consolidate because they will not continue to travel together on the same line.

Thus, the experiment provided in article [1] should be initially implemented with a tilt of the half transparent mirror, which is not 45 degrees, and thus, the two EM waves, emerging from the half transparent mirror, will not be able to consolidate.

However, it should be established that the emerging EM waves, in that scenario, are still always deflected according to Snell's law.

Thus, if the argument above is a viable argument, the argument which states that in an experiment as described in article [1], a consolidated EM is not created, this also implies, that, in this case, the EM waves were not deflected according to Snell's law.

Because, in an experiment as described in article [1], the half transparent mirror is tilted exactly at 45 degrees. In such a situation, if the EM waves are deflected according to Snell's law, both EM waves, emerging from the half transparent mirror, will continue to travel together on the same line and in the same direction, and thus, consolidate. But, as stated already above, if the above argument is a viable argument, a consolidated EM wave, does emerge from the half transparent mirror, which clearly implies, that, in this case, the EM waves were not deflected according to Snell's law.

Thus, the question must be asked, why, only the EM waves that are going to consolidate are deflected differently, and not according to Snell's law, by the half transparent mirror and are converted into a new EM wave which is not a consolidated combination of the two EM waves that met on that media, as the argument mentioned above states. It seems strange that the half transparent mirror deflects differently only the EM waves that are positioned such that they are about to consolidate.

Moreover, since the condition to cause two EM waves to consolidate, in the experiment described in article [1], is dependent only on the tilt of the half transparent mirror, it seems also very strange, that only a slight change of the half transparent mirror tilt, will result in deflecting differently only the EM waves that are positioned to become a consolidated EM wave, as compared to the deflections imposed on all other EM waves.

Thus, from the above, it can be concluded, that the argument above, which states that in an experiment, as described in article [1], the emerging EM wave will not be a consolidated EM wave, seems to be a problematic argument, even if the half transparent mirror is not recognized as a complete linear apparatus.

Thus, the discussions in this section, might provide extra support to the statement that EM waves, from separate sources, can and do consolidate.

5. Summary and Conclusions

The author of this article published several articles [1], [2], [3], which argue that Electromagnetic (EM) waves from different sources can and do consolidate, contrary to the acceptable notion presented in an article [4] that EM waves from separate sources cannot consolidate.

This article adds further support to the statement that EM waves from separate sources can and do consolidate, support that everybody can experience, from everyday experience, which can also be recorded on photos. However, as described in articles [1], [2], [3], if EM waves from separate sources do consolidate, this causes paradoxes, which must be addressed.

Thus, this article states that the claim that EM waves from separate sources can consolidate must be accompanied with additional and proper experiments, as described in article [1], that will try to provide acceptable proof that EM waves from separate sources can and do consolidate, and such an experiment should also try to explain the paradoxes that are the outcome of such EM consolidations. Thus, such experimentation might be a very important endeavor, considering what was already presented in the above discussion.

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Please also note that the article referenced in reference [1] whose title is: "Energy Analysis of a Null Electromagnetic Wave" was also written by Moshe Segal and was also inserted in the open e-Print archive viXra.org.

That article was also published by Physics Tomorrow Letters (PTL) in the Theoretical Physics Journal.
The link to that publication is:

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