



ע"ש ד"ר מג'די אבו לטיף - على اسم الدكتور مجدي أبو لطيف - Named after Dr. Majdi Abo Latif

“Don't exceed the speed of light because if you do, entanglement will violate Einstein's special relativity”

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Abstract

Nothing can exceed the speed of light is scientifically proven evident until now. Recent developments in quantum entanglement have challenged the Special Relativity Theory of Einstein. The purpose of the article is to evaluate whether quantum entanglement poses any threat to the theory and whether anything can exceed the speed of light. Literature suggests that development is still inconclusive and further experiment is required.

The secondary method is applied to research the article while the qualitative research design is used. A total of seven articles is chosen to analyse the results. Result analysis shows that apart from its competition with the speed of light, entanglement has various benefits in technology and cancer treatment. This article concludes that nothing can exceed the speed of light in a vacuum. Anyhow, entanglement can surpass this speed within certain boundaries.

Keywords: *Speed of light, entanglement, quantum entanglement, Special Relativity, Special Relativity Theory, Einstein, quantum physics, radiotherapy, speed*



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1. Introduction

The speed of light has a significance which is not limited to its role in the property description of electromagnetic waves. It is considered a fundamental constant of nature as it goes through the same speed in a vacuum with 299,792,458 metres per second equals around 300,000 kilometres per second (Hall, 2016). Speed of light was defined as a fundamental constant by the General Conference on Weights and Measures (CGPM) meeting in 1983 through a meter measurement (Penzes, 2009). According to Albert Einstein's Theory of Special Relativity, the speed of light is the fastest and nothing can travel faster than light. According to this theory, if any substance tries to approach near the speed of light, then the mass of that substance will become infinite. Therefore, it is evident that the speed of light is the universe's maximum speed limit. To experiment with this notion that nothing is faster than light, many scientists do research and experiments about substances that could be faster than the light; however, they have not found conclusive evidence.



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Figure 1: First-ever photo of 'Spooky' Quantum Entanglement (Space, 2019)

Alber Einstein described the entanglement phenomenon as a spooky action at a distance. It explains the linking of subatomic particles even if millions of light-years separate them. Contrary to the fact that subatomic particles are far from each other, any change in one particle will also affect the other. John Bell presented Bell's Theorem in 1964, where he presented the idea that such changes occur instantly (Gregory, 2022). The theorem presented by Bell is the contemporary idea in quantum physics; however, it conflicts with some well-established principles in physics. For example, Einstein termed entanglement 'a spooky action'. Practical work is done on quantum entanglement. The National Aeronautics and Space Administration (NASA) has stated that quantum entanglement can make deep-space communications possible. Figure 1 shows the first-ever photo of quantum entanglement, which was captured by scientists at the University of



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Glasgow (Space, 2019). If the concept of entanglement is practically viable, then Einstein's Theory of Special Relativity will be violated. This article is made to examine whether any particle can exceed the speed of light or not; and, if yes, how can the Theory of Special Relativity be violated.

1.1. Research Aim and Objectives

The aim of this study is to evaluate the speed of light concerning entanglement and Special Relativity Theory by Albert Einstein. Therefore, the research has the following objectives:

- To analyse if there is any substance which is faster than the speed of light
- To cross-examine Special Relativity Theory with entanglement
- To examine the risk to substances that tried to exceed the speed of light



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2. Literature Review

Until now, there is no conclusive evidence that any particle can move faster than the speed of light; however, scientists are making intensive research to understand any faster element. Quantum entanglement studies, somehow, point to scientists that two particles can be connected instantly, even if they are a billion light years away from each other. Various literature studies about the speed of light, Special Relativity Theory and quantum entanglement exist. The literature review section analyses past literature about the topic through various studies.

2.1.Speed of Light

There have been various studies and experiments on the speed of light for ages. In and between 450 BC, there were philosophers known as Empedocles of Acragas, who made speculations that light travels with finite velocity. However, they could not measure the velocity at that time (Hall, 2016). Around 1,000 years later, Anicius Boethius tried to document the light speed. But he was accused of treason due to his scientific work. Alhazen, the Arabic scholar, was the first optical scientist to suggest that light has a finite speed through experiments. After various physics developments and the telescope's introduction, Isaac Newton concluded that light requires 7 to 8 minutes to travel to earth from the sun (Johnston, 2015). Opinions from Newton opened the ways for scientific revolutions and new researchers to calculate the exact speed of light.



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Date	Author	Method	Result (km/s)	Uncertainty (km/s)
1676	Ole Rømer	Jupiter's satellites	220,000	
1726	James Bradley	Stellar aberration	301,000	
1849	Hippolyte Fizeau	Toothed wheel	315,000	
1862	Leon Foucault	Rotating mirror	298,000	±500
1879	Albert Michelson	Rotating 8-sided mirror	299,910	±50
1907	E.B. Rosa and N.E. Dorsey	Electromagnetic constants	299,788	±30
1926	Albert Michelson	Rotating 8-sided mirror	299,796	±4
1947	Louis Essen and A.C. Gordon-Smith	Cavity resonator	299,792	±3
1958	K.D. Froome	Radio interferometer	299,792.5	±0.1
1973	Evanson <i>et al.</i>	Lasers	299,792.4562	±0.0011
1983		Adopted value	299,792.458	

Figure 2: History of Light Speed Measurement (Johnston, 2015)

Figure 2 shows some historical events in the calculation of light speed. Ole Rømer was the first scientist who calculated the speed of light through satellites. As per his calculation, the speed of the light was 220,000 kilometres per second. Various scientists calculated the speed through different techniques. However, in the 20th century, the speed of light was calculated through the latest technology. Now there is a constant standard about the speed of light. It is considered a fundamental constant of nature as it goes through the same speed in a vacuum with 299,792,458 metres per second equals around 300,000 kilometres per second. Speed of light was defined as a fundamental constant by the General Conference on Weights and Measures (CGPM) meeting in 1983 by measuring a meter



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(Penzes, 2009). Many evidence base scientists believe that nothing can exceed the speed of light. This notion is not negated through pieces of evidence because there is a consensus that speed of the light is fastest in a vacuum.

However, the speed of light, around 186,000 miles per second is also not constant as it can be changed by involving a quantum interference or media. The speed of light is more when travelling in a uniform substance or vacuum. Therefore, lights travel faster in the air while their speed is reduced in water, glass or diamond. As shown in Figure 3, light travels in a vacuum by 186,000 miles per hour and if light passes through the water, its speed is reduced to 140,000 miles per second. Glass and diamond have more thickening surfaces where light speed is further reduced. The speed of light passing through the glass is 214,000 miles per second and 77,500 miles per second when it passes through the diamond (Olympus Life Sciences, 2022).



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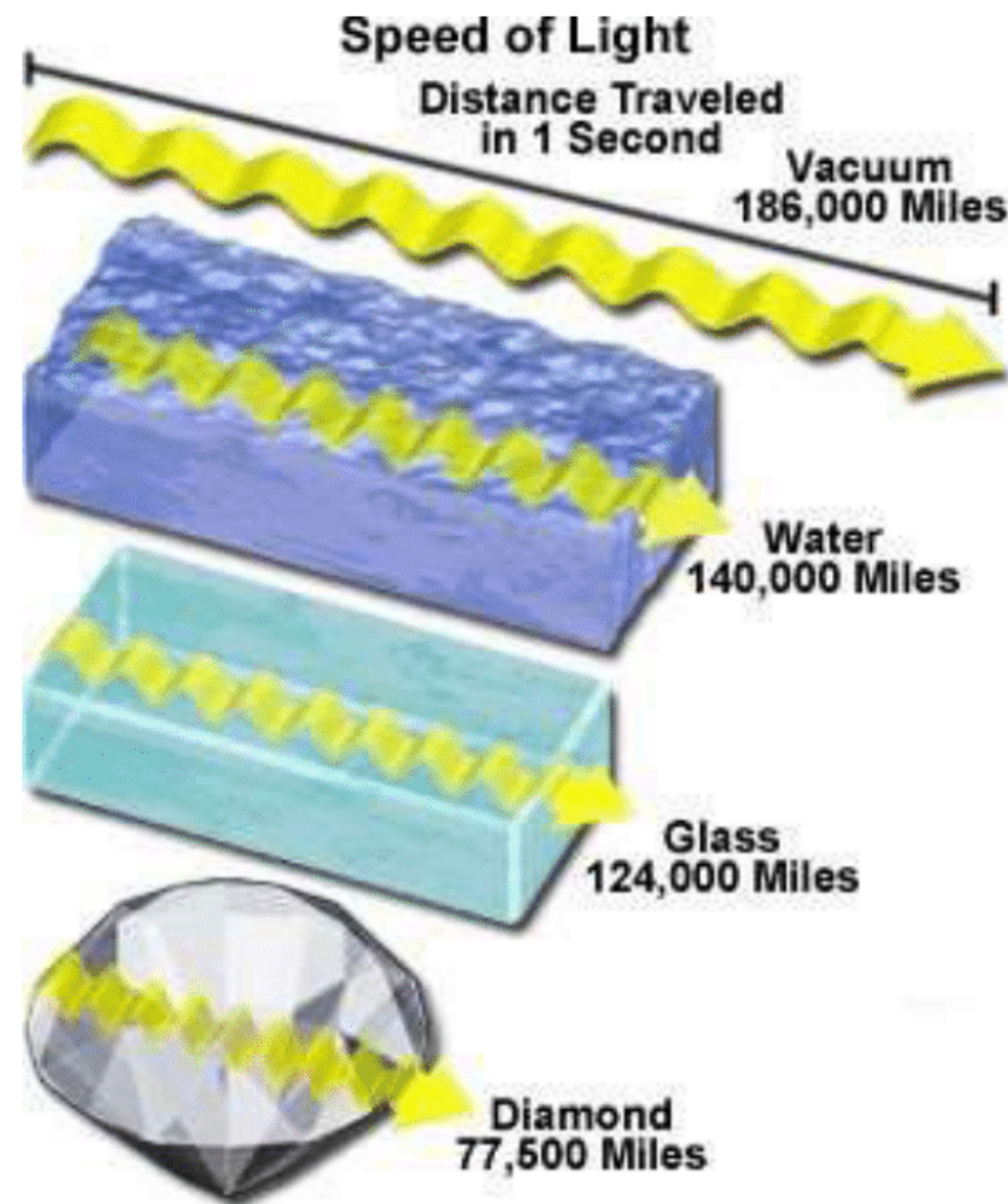


Figure 3: Speed of Light in Various Shapes (Olympus Life Science, 2022)

2.2. Special Relativity Theory and Speed of Light

Albert Einstein published Special Theory of Relativity in 1905, considered the first theory related to constant velocity movement of objects. Theory proved to be a revolutionary in the field of physics as it challenges the Law of Motion by Isaac Newton. According to the assumption of Einstein in the theory, the speed of light travelling through two different frames remains the same for observers located at different locations (French, 2017). Speed of the light is fastest and nothing can travel faster than the light. According to this theory if any substance tried to approach near speed of light then mass of that substance will become infinite. Two hypotheses are used in this theory; first hypothesis says that laws of



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physics are uniform in everywhere while the second hypothesis says that speed of light is constant regardless of the movement of light (Drory, 2015). Speed, mass and time are interlinked according to this theory. A formula is also derived from this theory;

$$e=mc^2$$

where,

e = energy

m = mass time

c = speed of light

It means energy is equalled to mass time multiplied by square of the light speed.

2.3. Impact of Environmental Pollution on Special Relativity

In this present age, plastic waste has become a serious issue for the enormous segments of the environment. Pollution in the environment has effect on the vacuum and speed of a particle in the vacuum (Barausse, Cardoso & Pani, 2015). It has been posing a high risk to aquatic organisms in the marine environment as well as substances in the air because most plastic wastage remain in the environment for centuries and spread far from distances out to oceans and sea. Industrial and domestic waste are the main source and contributors of the plastic waste spread in the environment (LI, Tse & Fok, 2016). The study further



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unveils the fact that, in the marine environment, both micro plastic and macro plastic are worsening the situation by posing a danger to organisms. This issue to save the aquatic life can only be handled if the government contributes in addressing the issue through legislation and plastics industries introduce plastic upgrading programs to end to the production of their products. Aquatic life is seemed to be most affected by the plastic waste and lead to the harmful diseases for the human beings.

Environment pollution is a global danger, impacting almost every freshwater and marine environment worldly (Borrelle et al., 2020). As the result of increase in the figure of plastic waste that affects the aquatic life, poses the dire consequences for the human being when they utilise the contaminated seafood, leading the rise in the diseases in the people and animals. Extraordinary work is required to control the entering of the plastic waste into the sea or oceans and minimise the impacts that several of parts of the environment has to face. The figure 1 that is given below, clearly illustrates the impact of plastic waste on the aquatic life.



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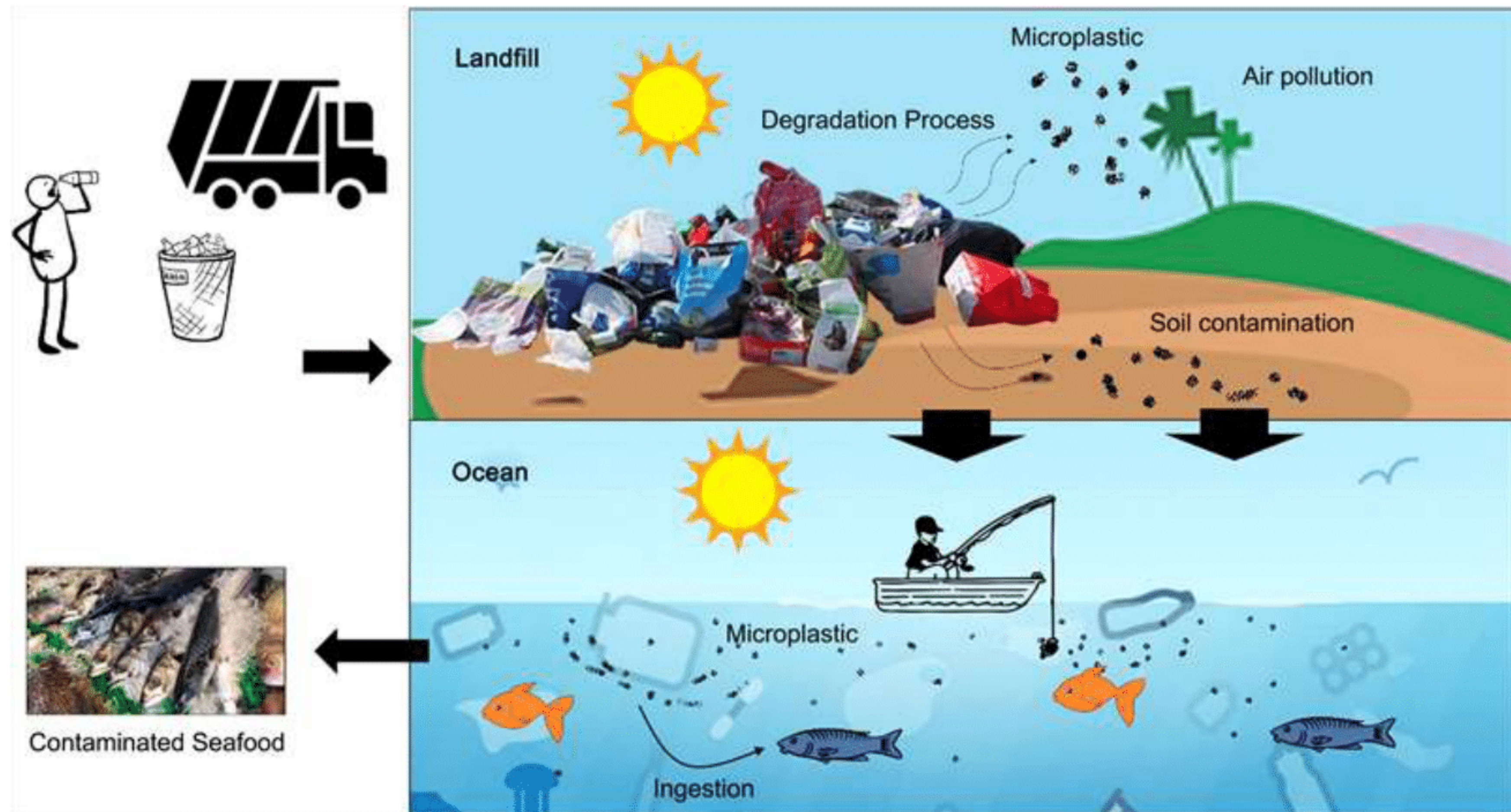


Figure 4: Impact of Waste on the Aquatic Life (Ref: Borrelle et al., 2020)

Incineration of plastic waste has become a major contributor of air pollution. According the research study, 12% burning of plastics by the Municipal Solid Waste release the harmful gases into the atmosphere such as Polychlorinated Biphenyls, Mercury, Dioxins and Furans following the creation of complexities and causing the climate change (Verma et al., 2016). Human, animal health, vegetation and environment receive adverse threat by the emission of the toxic gases into the atmosphere and disrupt the functioning of society as a whole. Dioxins affects the crops and waterways by settling on them and finally get into the body system through food causing neurological damage, cancer and the



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disruption the respiratory systems of the human. Most importantly, Respiratory ailments like rashes, headaches, asthma emphysema, problems of the nervous system and heart attacks are caused by the incineration of the plastic wastes in the environment (Hamilton & Yang, 2010). Speed of light can also be affected due to environmental pollution and contaminated environment.

2.4. Quantum Entanglement

Entangled particles remain connected to each other even if they are separated by million light-years. Changes in one particle also bring changes to the other particle. This is something crazy as it goes against the fundamental law of the universe. Entanglement phenomenon was described as a spooky action at a distance by Alber Einstein as he was against this idea that any entanglement exists in reality (Duarte, 2022). It explains the linking of subatomic particles even if they are separated by millions of light-years. Contrary to the fact that subatomic particles are well far from each other but ant change in one particle will affect the other particle as well. John Bell presented Bell's Theorem in 1964 where he presented the idea that such changes occur instantly. Theorem presented by Bell is contemporary idea in quantum physics; however, it is conflicting with some well-established principles in physics (Gregory, 2022). However, according to Space (2019), three noble prize winner scientists Alain Aspect, John Clauser and Anton Zeilinger



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integrate quantum phenomena with exceptional certainty degree. They also share first ever photo of quantum entanglement.

2.5. Use of Quantum Physics in Cancer Radiotherapy

Quantum physics has made various contributions to the mankind. Entanglement is also used in radiation and chemotherapy of cancer patients. Radiotherapy is particularly associated with prostate cancer radiotherapy because of the prostate gland position and pelvis and adjacent. The benefits of dose escalation and application of image guidance techniques such as CBCT has developed the scope of appropriate margins for planning target volume (PTV) alongside optimisation of IG (Pakela, 2021). Precisely, selecting a sufficient PTV margin is crucial for providing safe dose escalation using CBCT. CBCT has been widely used for visualising prostate before the delivery of treatment as it shows a fair display of dose distribution and CTV coverage. Busch (2021) claimed that no reduction was observed in the TCP as it was sampled from CBCT-outlined CTV₂ contours and contrasted with the planning scan contours employing the standard dose distribution. Similarly, Pawlowski et al. (2010) mentioned that more significant variation in rectal distribution could be discovered, which further leads the patient towards a difference between planned and actual NTCP of sufficient magnitude, which is required.

Hence, random variation in bowel distention leads the patient toward unpredictable outcomes. Simultaneously, planned doses can be declared as the poor predictor of actual



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rectal doses. Cone-Beamed Computed Tomography (CBCT) allows maximum accuracy in treatment and precise results in prostate cancer. Cavinato et al. (2021) analysed ten prostate patients with the help of 115 CBCT scans through various techniques. RR and Global results show that all failures in the study are basically because rectal distention is high. The study is based on Global RR and Bony RR, where researchers proposed that the users for a local RR should assess final registration quality. These findings are also supported by another research that mentioned in the research that the latest trend towards regional rector cancer care should be more focused as it leads to nonrestorative prostatectomies (Pakela, 2021). However, both studies have different dimensions and different groups of users. Even the demographics are different, but the results show the same tendencies.

2.6.Literature Gap

Though there is adequate literature available related to the light speed, special relativity theory; however, limited literature is available that links speed of light with entanglement. Quantum entanglement phenomena is still under investigation phase as very few researchers have successfully tested it. Therefore, fewer research studies are made on entanglement with respect to speed of the light. This research has reduced the gap by interlinking the studies to form an intense discussion about speed of light and quantum entanglement.



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3. Material and Methods

Research method is significant part of a article as it describes how the research is carried forward. It justifies chosen methodology and design to enhance the effectiveness of the research results. Moreover, it answers some questions like, what type of research is conducted, how the data is selected for the research, how the data was presented, the tools used for the research, and the reason for using chosen methods and tools to conduct the research (Bryman & Bell, 2015). The researcher selects the research method that can be quantitative and qualitative, depends upon the nature of the research. Methodology used for this study is presented in below sections:

3.1. Research Philosophy

There are two paradigms of scientific research; epistemology and ontology, that are well acknowledged in the existing literature and provide the basis for adaptation of a particular research philosophy to carry out scientific research. Though, there are various research philosophy approaches; however, interpretivism and positivism are two widely used research philosophies (Ryan, 2018). Interpretivism is based on subjective nature of the data while positivism is based on numerical nature of the data (Alase, 2017). There are already established concepts in physics about speed of light, entanglement and Special Relativity Theory; therefore, this research will base on analysing those concepts through subjective approach. Interpretivism is more suitable philosophy for this research.



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3.2. Research Design

Design of the article is important part of the research methodology because it sets the foundation how the article presents the data for analysis. Research design can either be qualitative, quantitative or mixed-method design (Johnston, 2017). The analysing of the data through multiple sources is a quality of the qualitative research to interpret the inherent meaning of the data given; thus, overcoming one's personal bias in the content of the research. This article has used qualitative research design because it is more suitable with interpretivism research philosophy and nature of the research. The qualitative research also assists with the understanding of the mutual relationship between the concept, such as the cultural contexts of the researcher and the biases, values and ideologies influencing the interpretation of the study (Alase, 2017). It also enhances the reliability of the results of the study. The qualitative research phenomenon defines and interprets the ambiguous themes of the data through non-numerical means, unlike the quantitative which examines the same in the context of statistical tools and numerical data.

3.3. Data Collection

Data collection can be made from primary resources or secondary resources. Primary data collection is based on direct collection through interview, survey, observation or measurement. Secondary sources of data include articles, books, websites or government published data. The data is required to be collected from secondary sources in this research



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(Johnston, 2017). Primary data collection does not seem to be productive in this stage because of the highly scientific nature of data that is required to be collected from the previous research work of different scientists and researchers (Martin et al., 2018). A detailed review of previously produced literature and the analysis of research is done by using the work in the field speed of light, entanglement and Special Relativity Theory. Total of seven (7) secondary data sources are used as secondary data collection which are related to the topic.

3.4. Research Analysis Techniques

Once data is collected, next crucial phase is analysis of the data for the article. Data is analysed through various quantitative and qualitative analysis techniques. For quantitative data, analysis can be made through SPSS, Excel Analysis, Descriptive Statistics, Correlation and Regression Analysis or any other statistical package used from data analysis (Bryman & Bell, 2015). On the other hand, qualitative data is analysed through thematic analysis, content analysis, critical analysis or systematic review. As this research is qualitative in nature; therefore, systematic review is more suitable approach for this article. Systematic review of seven secondary sources is made on this study to develop results and discuss them accordingly.



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3.5. Reliability and Validity

With reference to the business research, ontology refers to the reliability and validity of the obtained information and how the researchers understand its existence, while epistemology referred to the reliability and validity of the sources from where the information is obtained for the research purpose and by which means the researchers has obtained it. Reliability and validity are crucial measures that tells how reliable and valid is the research. Reliability can be measured about consistency of the results in terms of participants of the research (Heale and Twycross, 2015). Scientists have different opinions about entanglements and Special Relativity Theory; therefore, results could not be entirely reliable due to difference in opinion. Heale and Twycross (2015) further states that it is important consideration that reliability does not mean that research is valid as well. Validity of the research is difficult to compare than reliability. It shows whether the tools used to gather the data and data patterns are valid to get reliable results. Already established and peer-reviewed data is taken for the research analysis. Therefore, it is valid research as it covers all elements of the research topic.

3.6. Study Limitations

Limitations are part of the research; therefore, this study also has some limitations that can impact the effectiveness of this article. Major limitation is mode of data collection as primary data is not collected in this research which could be more beneficial. However,



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due to difficulty level of the research and time constraints, research relied on the secondary data (Shipman, 2014). Financial constraints also limit the research to secondary data because primary data collection could be expensive as compare to secondary data. If more time is allocated then this article could be more effective as more intensive data could be linked. Another limitation in the research is limited past research on the topic. However, these limitations are also the opportunity to conduct effective research within the available resources.



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4. Results and Findings

Findings shows the analysis from various secondary data resources related to objectives of the study. For this purpose, various secondary data sources are taken and integration is made between them to derive meaningful results. An inclusion and exclusion criteria are made where articles which are only later than 2018 are selected. Articles which include quantum entanglement, speed of light and Special Relativity are included while articles in another domain are excluded. Apart from that only English language articles are included.

Following table of results is presented through secondary data resources:

Authors & Year	Title	Findings
Xue, Y. (2021).	Basic Theory of Quantum Entanglement and the Possibility of Passing on Information Faster than the Speed of Light.	Quantum entanglement is hope for faster than light communication as it has the ability to connect two particles even far away from each other. However, it is still observations and conflict arise about its certainty. After careful analysis, faster than light communication seems not possible until now
Yu, Y. (2021).	Advancements in Applications of Quantum Entanglement.	Quantum entanglement is hottest research topic in quantum physics. Such phenomena is used in cryptography, wireless communication, internet etc. Recently, major breakthrough is seen in the development of quantum entanglement by scientists in Glasgow. However, still plenty of evidence-based research is required to reaching conclusion that entanglement can be faster than the speed of light.



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<p>Wang, X. (2021).</p>	<p>Quantum Entanglement Results from Quantum State Transition at Fast-Than-Light Speed with Matter Wave's Phase Velocity.</p>	<p>Quantum systems can be entangled through various conservations methods. These particles connect through waves and speed of quantum entangled can be faster than the light. Matter wave speed can also be faster than the light. However, this speed is not valid except from few areas.</p>
<p>Gudder, S. (2020).</p>	<p>Quantum entanglement: Spooky action at a distance.</p>	<p>Entanglement is important concept in the quantum theory and believes to be a weird theory in physics. Anyhow, it is still useful in various fields but notion about its faster-than-light speed has no evidence base. Mathematical calculation is used to calculate measure of entanglement.</p>
<p>Friedman, Y., & Scarr, T. (2019).</p>	<p>Symmetry and special relativity.</p>	<p>Universal speed and invariant metric are obtained without using constant velocity of light. The corresponding bounded domain is symmetric with respect to the conformal maps. This leads to explicit analytic solutions for the motion of the charged particle</p>
<p>Bartlett, R. (2019).</p>	<p>Quantum Entanglement & Special Relativity Connected with Everything from Neutrons, Dark Matter & Ocean Tides to Matrix Maths, Dark Energy & Higher Dimensions.</p>	<p>The article sheds highlight on various elements which are connected through quantum entanglement. Neutron and photon are electromagnetic particles that are used to attract element through gravitational forces. However, this article did not mention whether quantum entanglement negates special relativity or not</p>
<p>Morozov, V. B. (2022).</p>	<p>Universe at a constant speed of light.</p>	<p>This article calculates the speed of light by taking an example. Findings show that constant speed of light can be affected by cosmological redshift. However, speed of light is constant in a vacuum and it is scientifically approved.</p>



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5. Discussion

Findings of the chosen seven articles show that quantum entanglement has, somehow, challenged the Special Relativity Theory by Albert Einstein. Ability to connect two long distance particles at long distance is the revolution in the quantum physics. Xue (2021) believes that entanglement has the ability to challenge the speed of light by moving faster than light but its ability is limited to certain particles like waves, radiation, electromagnet waves or long-distance transmission. In fact, it used the medium to faster communication through internet technology. Yu (2021) also agrees to faster communication ability of quantum entanglement. He stated that such phenomena is used in cryptography, wireless communication, internet etc. Recently, major breakthrough is seen in the development of quantum entanglement by scientists in Glassgow. However, still plenty of evidence-based research is required to reaching conclusion that entanglement can be faster than the speed of light. Special Relativity Theory has high significance in the Physics because it is still valid even after one century is passed. Various scientists research on the possibilities of finding something which can move faster than the light.

However, there is no conclusive evidence until now that can prove Special Relativity Theory wrong. Maybe it is because of the honour given to Sir Albert Einstein that scientists do not dare to challenge his theory. Even if no contrasting comparison made between entanglement and speed of light; there are various benefits of entanglement in



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radiotherapy that can be used to cure cancer patients effectively. Yartsav & Bauman (2016) looked into the various studies on the utilisation of edges in radiotherapy of patients with prostate malignancy, zeroing in on various alternatives for Image Guidance (IG) and specialised issues. The inquiry in PubMed information base was restricted to incorporate examinations that elaborate outside pillar radiotherapy of the unblemished prostate. Post-prostatectomy considers, brachytherapy and molecule treatment were rejected. Each article was described by the IG procedure utilised: situating on outer imprints utilising room lasers, bone life systems and delicate tissue match, use of fiducial markers, electromagnetic following and adjusted conveyance. It is also linked with the literature review where study of Pakela (2021) also highlights the significance of quantum in the radiotherapy.

Research findings as well as literature review also prove that speed of the light is fastest in a vacuum in the universe. The fact is made evident because any other object has not scientifically proved that can exceed the speed of light. Gudder (2020) emphasised that entanglement is important concept in the quantum theory and believes to be a weird theory in physics. Anyhow, it is still useful in various fields but notion about its faster-than-light speed has no evidence base. These findings are also supported by literature review where, Drory (2015) suggested that speed of the light is fastest and nothing can travel faster than the light. It was also mentioned in the Special Relativity Theory as according to this theory if any substance tried to approach near speed of light then mass of that substance will



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become infinite. Two hypotheses are used in this theory; first hypothesis says that laws of physics are uniform in everywhere while the second hypothesis says that speed of light is constant regardless of the movement of light (Drory, 2015).

Some researchers believed that the sound is faster than the light; however, this assumption is not true. It is because sound uses a mechanical wave or any other medium to create disturbance while light is not a wave. Light is a fundamental particle and it does not need any medium to travel. Apart from that speed of sound is very less than the speed of light as sound travels through 340 meters per second speed while light travels through 300 million per second (Trachenko et al., 2020). In fact, there is no comparison of these two mediums. However, quantum entanglement is the only object that can surpass the speed of the light under various assumptions. Barlett (2019) tried to establish a link between quantum entanglement and special relativity through neutron and photon which are electromagnetic particles that are used to attract element through gravitational forces. At the end of this article, it is concluded that nothing can exceed the speed of the light in a vacuum. Anyhow, entanglement has the ability to surpass this speed within certain boundaries but this assumption still requires a lot of research and tests to prove this notion.



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6. Conclusion

Although this article is based on secondary data and has limited scope, it is helpful in connecting the dots between quantum entanglement and speed of light. This article was qualitative in nature and data was analysed through already published articles. This article concludes that, scientific evidences show that no particle should exceed its speed from speed of light because it is not possible. Article also acknowledges the recent developments in the field of quantum entanglement, specially the one by three scientists from University of Glasgow. The National Aeronautics and Space Administration (NASA) has stated that quantum entanglement can make deep-space communications possible. If the concept of entanglement is practically viable, then Einstein's Theory of Special Relativity will be violated. However, it is not yet practically viable because entanglement also use electromagnetic waves to connect to another particle. Therefore, this concept needs more research and scientific tests before making opinions about its viability.

Isaac Newton concluded that light requires 7 to 8 minutes from traveling to earth from the sun. Opinion from Newton open ways for scientific revolutions and new researchers to calculate the exact speed of the light. However, in 20th century, speed of the light was calculated through latest technology and now there is a constant standard about speed of the light. It is considered as a fundamental constant of nature as it goes through same speed in a vacuum with 299,792,458 metres per second equals around 300,000



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kilometres per second. It also paves the way for Special Relativity Theory by Einstein which is still valid even after historical developments in the quantum entanglement. There are certain limitations in this article like its sample size and data collection from secondary sources. Primary data from various physicists could have more effective impact on the results of this article. However, it was not possible in short span of time. There is implication for future researchers that primary data should be collected from scientists who are working in quantum entanglement projects.



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