

Communication with The Past

Anthony Maccini

Flat 9, Fairhall Court, 114 - 124 Kingcharles Road, Surbiton, KT5 8QL, England

*Corresponding author details: Anthony Maccini; anthonymaccini@hotmail.com

ABSTRACT

One outlines a proposal for an experiment to communicate with the past. One considers using advanced waves, produced in the same way that was discovered by Darko Bajlo. The advanced waves are both incoming from the past and outgoing into the past, reflecting the speculation that there are two flows of time, one into the past and one into the future. Using techniques of radio direction finding, information can be extracted from an observer with a transmitter in the past, by the fact of the advanced waves being incoming waves, and then sending a signal in response to the retarded signal in the past, thereby having two-way communication. One also considers using tachyons if tachyons behave in the same way as advanced waves. If one had a constant supply of tachyons, one could modulate these tachyons to send a signal into the past. Lastly, one speculates if Tesla and Marconi might have received signals from the future.

Keywords: advanced waves; tachyons; radio; communication

INTRODUCTION

Is it possible to communicate with a person in the past? On first encountering such a statement, it would cause a reaction of disbelief and skepticism. But this is actually what I am suggesting in this paper. The method to do this is by using advanced waves, first detected by Bajlo [1], of using radio direction finding of a radio transmission by someone in the past, for two-way communication by exploiting the fact that advanced waves appear to be incoming waves from the past, converging on the antenna from infinity in our present. But also regarded by Bajlo as outgoing waves into the past. In a paper by Bajlo [2], he explains this: The common sense belief that electromagnetic influences propagate forward, not backward, in time comes from experience gained by living in the macroscopic world of a large number of particles interacting, in which all the processes that humans can perceive take place in the direction in which entropy increases. However, this does not mean that fundamental processes in nature must take place in the same way. If we trust mathematics rather than common sense, and accept that electromagnetic influences can propagate backward in time, then advanced waves are not sourceless and non-causal. From the human perspective, the cause of advanced waves lies in the future - the effect precedes the cause, but that is just a matter of perspective. Humans are creatures that move along the time dimension in one direction, so the view of the time-symmetrical process is necessarily distorted when viewed from the human perspective. The only way to avoid such distortions is, as Price suggested, to move away and see things from a non-anthropocentric perspective, from 'nowhen' outside the block of space-time, in which all dimensions and directions are equal. The

view from nowhen of the process of emission of electromagnetic waves in free space. Advanced waves that spread from the antenna towards the past. Retarded waves that spread towards the future. Both waves originate from the antenna at the moment of emission, and both waves are outgoing. A confused human being, whose psychological experience of time has a preferred direction, misinterprets the advanced waves as incoming waves that emerge from infinity without causation and converge to the point at the location of the antenna, exactly at the moment of emission.

Bajlo was the first person to detect advanced waves, he says on page 5 of the paper: Is there any way to detect advanced electromagnetic waves that the transmitting antenna radiates into free space? The solution to this measurement problem is to minimize the influence of the measuring instrument on the phenomenon being measured. This can be easily achieved with the meter and decimeter radio waves by using a small enough receiving antenna for detection, where its advanced waves cannot completely cancel the advanced waves from the transmitting antenna. If the results of the recent experiments represent the real signal and not some systematic error, then the advanced radiation can actually be detected with a receiving antenna twenty times smaller than the wavelength of the emitted electromagnetic pulses.

So here there are or appear to be two directions of advanced waves, incoming from the past (would already have been sent into the past, to then be incoming from the past) and outgoing into the past, as Bajlo says. There seems to be two flows of time.

It is this double nature that I think one can exploit for two-way communication with someone in the past.

Lets for the sake of argument consider an observer in the past, that they use a radio transmitter in the past, sending out retarded signals. With this double nature of advanced waves one can use the advanced waves to extract information from such an observers transmitter in the past, by radio direction finding, incoming advanced waves can carry the extracted information to us from the past. And then send a signal back to this observer, (outgoing waves). What is radio direction finding? Its possible to extract information from a radio signal by having another radio signal interact with it, a technique used in methods like radio frequency (RF) forensics or radio direction finding. This is achieved by using a receiver that is tuned to the same frequency and modulation scheme as the original signal or by using advanced techniques to analyze the electromagnetic radiation from electronic devices. Other methods like those used in electronic warfare, involve using a specilized receiver to intercept and analyze signals that are not meant to be intercepted. These methods can include using advanced algorithms to detect and extract information from even short lived or encripted signals.

This is how one might communicate someone in the past? Of course this is a highly speculative idea, it needs experiment to test it out, if this double nature of advanced waves really does work this way. And with any advanced signal into the past, one has to know how far into the past the signal goes, the location, time and date, where in the past that person is, that one wants to communicate with in the past, and when they are transmitting. Only in this way can one have communication with a person in the past. Of course if experiments are done, one can experiment to test this out. But how to know the frequency and modulation of the transmitter in the past to extract information. One would choose someone historical, where there are historical records on the frequency and modulation and where that transmission took place and what time? Once such person would be Marconi.

EXPERIMENT

One is taking the view that advanced waves are outgoing into the past, and also incoming waves from the past at the same time. That there are two time flows, one into the past, one into the future and that if this is true, it would allow the possibility to have two way communication with the past. One is simply exploiting this fact. To do this I am outlining an experiment that can be done with advanced waves, here I outline my idea.

An observer A, who is in the past, has a radio transmitter and sends out a retarded signal. A day or week later, another observer B, transmits and advanced signal (outgoing wave). The advanced wave travels into the past and interacts with observer A retarded transmission and B receives an advanced signal (incoming wave) from interacting

with A, transmission. But how is B able to extract information from A, retarded transmission. B, uses radio direction finding. For it is possible to extract information from a radio signal by having another radio signal (advanced wave) interact with it. A technique used in methods like radio frequency (RF) forensics or radio direction finding. This is achieved by using a receiver that is tuned to the same frequency and modulation scheme as the original (retarded signal of A) or by using advanced techniques to analyze the electromagnetic radiation from an electronic device.

But here were exploiting the fact of using advanced waves having interacted with A, signal with advanced waves (incoming waves) acting as a receiver. Using advanced waves to extract information from A, broadcast in the past. Because of our phycological experience or entropy increase of time having a preferred direction. Where the advanced waves as incoming waves from the past, would also have already been sent into the past before we sent it, to receive it as incoming waves from the past. And B would have extracted information from A, transmission. B having got this information signal from A, where B can then send out another signal to A, that is received by A in the past, and that this is the basic experimental idea, of two way communication with someone in the past. But from Historical records B, needs to know the frequency and modulation scheme of A, original signal in the past to extract information of A, transmission. But doing such experiment that can now be tested, one would have this information, before doing it with someone in the past. Also there is the issue of hoping the advanced waves don't self-cancel with the retarded waves from A, in the past? This can be tested out with an experiment.

COMMUNICATION WITH TACHYONS

Now I want to consider communication with tachyons with the past, based on similar ideas with advanced waves. The only way that tachyons could be used for two way communication with the past, is if one has a constant supply of tachyons, and if also those tachyons behaved in the same way as advanced waves, in a identical experiment as just been outlined with advanced waves.

One would need to produce a constant stream of tachyons, that are modulated to a frequency of A, signal, where one can send and extract information from A, transmission in the past. One can by accelerating charged particles that radiate tachyons from charged particles, where the tachyons in a constant stream are modulated to a frequency to carry information to the past. When the tachyons collapse into photons within a finite time, one has to insure that the modulation and frequency of the tachyon signal is similar in the photons, that will be detected as an electric wave in the past time of A.

Such an experiment can be done, if and when in the future one has access to producing a constant supply of tachyons, and that they can be modulated into a frequency. Also, in producing tachyons in our present,

to be sent into the past might be invisible to us and unobservable. And such tachyons might only be observable if there received from our future, and that goes for A, as well, where we would be in the future, from the point of view of A. All that has here been said will have to wait until there is undeniable experimental evidence of tachyons, and that one can routinely produce a constant supply of tachyons. And if such tachyons behave like advanced waves, are incoming from the past, and outgoing into the past at the same time, and that one can use with them to extract information of A, by using radio direction finding.

HOW TACHYONS THEORETICALLY MIGHT BE PRODUCED

Now I want to discuss how tachyons might be produced as theoretically suggested by Takaaki Musha in a paper [3], 'Possible existence of faster-than-light phenomena for highly accelerated elementary particles'. Takaaki Musha says in his paper: The possible existence of faster-than-light particles, which are forbidden by the known laws of physics, have been studied by many physicists. But the existence of such particles has not been confirmed by experiments. This paper shows that faster-than-light phenomena can be permitted for highly accelerated elementary particles if they have a very small mass compared to that of the electron.

From the relativistic formula for kinetic energy, ordinary particles are confined in an infinite well of the velocity of light, so it has been considered that faster-than-light (FTL) phenomena have no possibility of existence. Contrary to this conclusion, many physicists have studied the possibility of FTL particles, called tachyons by Feinberg. They have been searched for by various experiments, but most of the results were negative to their existence. The purpose of this paper is to show the possible existence of FTL phenomena for highly accelerated elementary particles in the quantum domain.

He say further, on page 34: The calculated result of the relation between the probability for the particle transferred into FTL state vs its original rest mass, is the relation between the travelling distance in FTL state vs the particles rest mass, assuming that the size of the atomic nucleus is $10^{-14}m$. It is seen that the light particle created inside the atomic nucleus, which has the non-zero rest mass less than $10^{-32}km$, has the probability of almost unity of transferring into the FTL state.

Forward reported that the electron neutrino and the muon neutrino have been experimentally observed as tachyons which have an imaginary rest mass. If the rest mass of the neutrino emitted from the atomic nucleus is less than $10^{-35}km$, its travelling distance of the particle in FTL state becomes more than 1m and they may possibly be experimentally detected as tachyons. If the rest mass of the neutrino is less than $10^{-41}km$, the value of the travelling distance becomes more than $10^{12}m$. Supposing that an imaginary-mass particle would not interact with real-mass particles, solar neutrinos could hardly be

detected on the Earth because the distance between the Earth and the Sun is about $1.5 \times 10^{11}m$ and most of solar neutrinos reach the Earth in the FTL state. Takaaki Musha conclusion at the end of his paper says: the possibility of the existence of FTL phenomena in the quantum domain has been discussed. The theoretical analysis gives the result that the FTL phenomena could exist for light particles as electron neutrinos created inside the atomic nucleus if they have a non-zero but small rest mass.

My only point here is that its been said, that tachyons don't need to go through the light barrier, that like light photons always travelling at c , and always exist at c at their birth, that tachyons when they are born always travel faster than light, and if they lose energy, they speed up. So particles like tachyons always travel faster than light, and have no need to go through the light barrier. But at the same time Takaaki Musha has shown of particles with sufficiently small mass can travel through the light barrier.

In a letter to me by Takaaki Musha [4], showed the work of Jacques Steyaert, who claimed to have detected tachyons, it reads: In 1984-1985 a Belgian physicist by the name of Jacques Steyaert purportedly demonstrated the existence of tachyons at the Nuclear Physics Institute of the University of Louvain-la-Neuve. Steyaert used the Institute's large cyclotron to produce high-energy gamma rays and with the help of an experimental device, which I will not take the time to describe here, studied the different ways in which these gamma rays were absorbed by matter. The observation was not made in a space-time system, but rather in an energy-momentum system. The analysis of the data gathered in this fashion required lengthy calculations and tedious manipulations. The result was the appearance of a pair of particles, whose speed was estimated by Steyaert to be 1.2 times the speed of light in a vacuum.

These must have been tachyons, since they traveled faster than light. Steyaert was also able to determine the mass of these particles. We usually estimate mass in electron volts because of the equivalence of mass and energy. The mass of an electron, for example, is 500 000 electron volts, whereas the mass of a tachyon is 230,000 electron volts, thus, approximately half that of an electron. These particles also had the characteristic of behaving like magnetic monopoles. Steyaert had demonstrated that a stream of these particles could produce an electrical current by induction, Unfortunately, he was only able to observe these magnetic monopoles once. Thus, Steyaert accumulated scandals so to speak. For one thing, he claimed to have located tachyons, and for another, he declared these tachyons to be magnetic monopoles. Of course, these experiments would have to be repeated in order to determine if his interpretation was correct. If it turns out to be valid, the existence of tachyons will have been proved experimentally.

There is another paper by Takaaki Musha [5], 'Superluminal speed of photons in the electromagnetic Near-field'. Where he says in his abstract: The possible existence of superluminal particles, which are forbidden by well-known laws of physics, has been studied by many physicists. Some of them confirmed the superluminal speed by their experiments. By using Klein-Gordon wave equation for photons, the author shows that the photon travels at a superluminal speed in an electromagnetic near-field of the source and reduce to the speed of light as they propagate into the far field.

In this paper, on page 36, Takaaki Musha has the wave equation for the superluminal photon, the Klein-Gordon equation:

$$i\hbar \frac{\partial \psi}{\partial t} = H\psi$$

Where H is a Hamiltonian given by

$$H = \sqrt{p^2 c^2 + m^2 c^4}$$

Where p = Momentum of the particle, m = effective mass, and ψ is a wave function of a particle. The following equation can be obtained for the accelerating particle:

$$\frac{\partial \psi}{\partial p} = -\frac{i}{m\alpha\hbar} \sqrt{p^2 c^2 + m^2 c^4} \psi$$

Where \hbar is the Plank constant divided by 2π , c , is the speed of light and α is proper acceleration given by $p = m\alpha t$.

Here I want to comment on the Klein-Gordon equation that Takaaki Musha is using. The equation $E = mc^2$, commonly associated with the work of Albert Einstein, was first published in 1890 by Oliver Heaviside and then refined by Henri Poincare in 1900 and Olinto De Pretto in 1903, and it then became famous with Einstein's special relativity, where it was integrated with the momentum in the energy/momentum/mass equation, called the Klein-Gordon equation:

$$E^2 = m^2 c^4 + p^2 c^2$$

Where the total energy (E) is the result of the sum of the momentum (P) and mass(m), multiplied by the speed of light (c). Being a second-order equation, it is necessary to take a square root, which always produces two solutions, one positive and one negative. This simple property of square roots implies that the solution of energy is always dual: positive (+ E) and negative (- E). According to Einstein's special relativity: the positive energy solution (+ E) describes energy that diverges from causes located in the past and which propagates toward the future (retarded potentials); and the negative energy solution (- E) describes energy which diverges from causes located in the future and which propagates backwards in time from the future towards the past (advanced potentials).

However, when the Schrodinger wave equation is turned into a relativistically invariant equation, the Klein-Gordon's relativistically invariant wave equation:

$$E\psi = \sqrt{p^2 + m^2}\psi$$

Both solutions of the equation need to be considered as a possibility, even a non-physical negative energy has to be considered as a possibility. According to Klein-Gordon's equation: the positive solution (+ $E\psi$) describes waves which diverge from causes located in the past and which propagate towards the future (retarded waves); the negative solution (- $E\psi$) describes waves which diverge from causes located in the future and which propagate backwards in time from the future towards the past (advanced waves).

All the above applies to Takaaki Musha's wave equation for the superluminal photon in his paper [5]'Superluminal speed of photons in the electromagnetic Near-field', as was said above. In that paper Takaaki Musha works through the Klein-Gordon equation, with an number of calculations to obtain wave functions for subluminal speed and for superluminal speed for a photon or particle. Here it is for superluminal speed:

$$\psi_* = C \cdot \exp \left[-\frac{\omega l}{2c} \sqrt{\beta^2 - 1} \left(\frac{\beta}{\beta^2 - 1} - \log \left(\frac{\hbar\omega}{c} \right) - \log(1 + \beta) \right) \right]$$

Where $\beta = v/c$

DID TESLA AND MARCONI RECEIVE SIGNALS FROM THE FUTURE?

Nikola Tesla claimed to have received signals from Mars while experimenting at his Colorado spring Laboratory in 1899. He believed these faint rhythmic signals were not random, but came from an intelligent source. His announcement in 1901 generated considerable media attention, but was met with skepticism from the scientific community.

Guglielmo Marconi suspected 90 years ago that Martians were sending morse code messages to Earth. Marconi's company London manager J.H.C Macbeth who claimed Marconi was convinced of mysterious, long-wavelength signals. The signals had a wavelength far exceeding any used by Earthly stations, Macbeth claimed. This was met with skepticism from experts who claimed that the signals were caused by atmospheric interference from other powerful stations.

Obviously something was going on in 1903-1924? People were convinced their receiving mysterious signals attributed to Mars. Even the US Navy asked for radio silence, as they tried to listen in for signals from Mars. Of course we have sent space probes to Mars, there are no Martian's. Were these mysterious signals from the future, or just background interference? I don't think this will ever be resolved and remains a mystery.

It is just a skeptical idea I am giving, that the signals Tesla and Marconi got, might have been from the future?

CONCLUSIONS

I have outlined here and experiment on the possibility of communicating with the past, using advanced waves, and of course using tachyons will have to wait till a future discovery of their existence, if in the future constant stream of tachyons can be produced, to communicate with the past.

The speculation if Tesla and Marconi did receive signals from the future, will remain that, speculation and will remain an mystery if they ever did really receive unexplained signals?

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