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The Possibility and Consequences of Electrons Orbiting Faster Than Light of An Element

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ABSTRACT

Theoretically, if electrons in the orbit of an element's atoms were to orbit faster than light, there might be emission of Cerenkov radiation, and that element propagates into the past. As it seems practically impossible to make electrons orbit the atoms in an element faster than light, one considers tunneling. It is known that electrons that tunnel, according to Gunter Nimtz, propagate faster than light. If one can achieve continuous tunneling of electrons through a superconducting quantum interference device (SQUID), faster than light might achieve this. But the properties of tunneling electrons become virtual particles, non-local, faster than light, and invisible would be magnified in a SQUID.

Keywords: SQUID; superconducting; electron; tunneling.

INTRODUCTION

One starts out considering what would happen if an element's electrons orbit in its atoms, and move at the speed of light, and then considers if an element's electrons moved faster than light. There may be a burst of Cerenkov radiation, as the element propagated into the past. This would be a form of time travel.

I consider Hydrogen as a possibility, having only one electron, and is a far simpler state in the manipulation of its electron, around the proton, to influence it to orbit faster than light. One way of doing this might be by using tunneling, where in tunneling electrons and photons move faster than light. But there seems no known way of getting an electron in Hydrogen to tunnel around its orbit faster than light, instead of tunneling out of the Hydrogen atom.

I get around this by considering the use of superconductors, specifically superconducting quantum interference devices (SQUID). Because one gets tunneling in SQUID and superconductors. What if one sent electrons to tunnel around and around continuously in a SQUID, where electrons in tunneling travel faster than light. Where the electrons interact with the atoms of the SQUID, and the orbits of the electrons in the SQUID, to try to imitate electrons going faster than light in atoms. Would the SQUID propagate into the past?

I go through a number of papers, that explain the nature of tunneling, where it is found that particles in tunneling become virtual particles, are faster than light, are nonlocal, and are invisible. In a SQUID all these strange properties would be magnified on a large scale. This is an experiment that could be done. Of course, tunneling is a form of teleportation, so what would happen in the SQUID?

TO GET AN ELECTRON IN ITS ORBIT FASTER THAN LIGHT

Electrons in gold move close to the speed of light, which gives its gold colour, electrons orbit 58% of the speed of light in gold. What happens to matter if electrons in its atoms move faster than light, would the atoms (matter) propagate backward in time? For electrons in gold, 1.37×10^7/sec, and light 3.00×10^8/sec, relative to the speed of light, $\frac{v}{c} = 0.045757$, and in gold the inner (1s) electrons move at 58% the speed of light Z=29.

If an element's electrons were to somehow travel at the speed of light, the element would likely cease to exist in its current form, as it would become infinitely massive, requiring infinite energy to motion its speed. When the electron travels at the speed of light, it becomes a ray of light itself.

In experiments, with ultrashort laser pulse, physicists have been able to generate hot electrons that travel faster than light in a pile of glass and emit Cerenkov radiation. It is known that nuclear reactors in water, give off the blue glow of Cerenkov radiation due to electrons travelling faster than light, where the speed of light is slower than the speed of light in vacuum, in water, and in glass due to the index of refraction. One can guess that if electrons in an element went faster than light, that element would emit Cerenkov radiation and would go into the past.

On first impression, it seems impossible to get the electrons in an element to go faster than light.

But one might use Hydrogen? It has one proton and one electron, one chose Hydrogen because it is simpler than the other elements. In tunneling a particle teleports faster than light, in going through a potential barrier. Can one do this to the electron in the Hydrogen atom? If one did this in an experiment with the electron in its orbit of Hydrogen to tunnel superluminal, would the Hydrogen atom propagate into the past? Would this be a potential time travel idea?

One might use a medium like glass or water in an experiment with Hydrogen, encased in glass or water, where the speed of light is slower than the speed of light in a vacuum, where the Hydrogen atom would emit Cerenkov radiation? In radioactive elements, particles tunnel through the potential barrier of atoms and produce radiation. Gunter Nimitz says in his paper [1], Erratum to: On virtual phonons, photons, and electrons, on tunneling that the refractive index plays a role in the potential for electromagnetic evanescent modes in wave mechanical tunneling.

He says in his abstract:
A macroscopic realization of the peculiar virtual particles is presented. The classical Helmholtz and Schrodinger equations are differential equations of the same mathematical structure. The solutions with an imaginary wave number are called evanescent modes in the case of elastic and electromagnetic fields. In the case of non-relativistic quantum mechanical fields, they are called tunneling solutions. The imaginary wave numbers point to strange consequences: The waves are non-local, they are not observable, and they are described as virtual particles. During the last two decades, QED calculations of the solutions with an imaginary wavenumber have been experimentally confirmed for phonons, photons, and electrons. The experimental proofs of the predictions of non-relativistic quantum mechanics and the Wigner phase time approach for the elastic, electromagnetic, and Schrodinger fields will be presented in this article. The results are zero time in the barrier and an interaction time (i.e. a phase shift) at the barrier interfaces. The measured tunneling time scales approximately inversely with the particle energy. Actually, the tunneling time is given only by the barrier boundary interaction time, as zero time is spent inside a barrier.

Nimtz's paper, he says, that in tunneling experiments with such signals, superluminal velocities up to $5 \cdot c$ have been measured. Zero tunneling time for electrons was calculated and recently exhibited in electron tunneling experiments. So, tunneling electrons are faster than light.

He goes on: The superluminal velocity has been reproduced in experiments at microwave, infrared, and optical frequencies in photonic band gap material, i.e. optical mirrors and double prisms. Three strange properties of evanescent and tunneling modes are mentioned: They are nonlocal, tunneling particles are not observable, and they are virtual particles. Experiments have shown that evanescent modes are present at the same time all over the barrier i.e. at the front and at the back of the barrier, i.e. nonlocal and a superposition state.

If one uses a superconducting quantum interference device (SQUID) for electrons to be tunneling continuously around a SQUID, is that the tunneling electrons would pass through and interact with the atoms that make up the SQUID, to perhaps imitate electrons moving in atoms faster than light, because it's hard to get electrons any other way to orbit atoms faster than light. And if this happened with the atoms in the SQUID by tunneling, would the SQUID propagate into the past? Or would something stranger happen in the SQUID, considering tunneling particles are nonlocal, virtual, not observable, and faster than light, and all this will be magnified on macroscopic size in a SQUID.

Carrying on with Gunter Nimtz's paper, he says of Tunneling:
The electric energy density U of the evanescent electric field E with its imaginary refractive index is negative:

$$U = \frac{1}{2}\epsilon E^2 < 0$$

$$\epsilon_r = n^2 < 0$$

Where $\epsilon = \epsilon_\circ \cdot \epsilon_r$
In the case of particle tunneling, we get a negative total energy W

$$W = W_{kin} - U < 0$$

Where W_{kin} and U are the kinetic energy and the potential barrier hight.

He says further: An evanescent field does not interact with real fields due to the imaginary wave number resulting in an impedance mismatch.

So perhaps the tunneling electrons in SQUID will not interact with the SQUID? He goes on in his paper, saying:

Thus, an evanescent mode violates microscopic causality. In a SQUID tunneling will be magnified, so you may have causality violation macroscopically.

If electrons or photons tunneling become virtual particles, nonlocal and invisible, and faster than light. Then one has to argue that perhaps the vacuum ZPF or dark energy has these properties being nonlocal, invisible, virtual particles and faster than light - and teleportation - does Vacuum ZPF or dark energy represent another dimension, are the particles that tunnel that Gunter Nimtz talk of entering another dimension?

There is another paper by Gunter Nimtz [2] 'Tunneling violates special relativity', which covers the same issues pointed out in his first paper [1], but clarifies other points.

He says in the abstract: Experiments with evanescent modes and tunneling particles have shown that i) their signal velocity may be faster than light, ii) they are described by virtual particles, iii) they are nonlocal and act at a distance, iv) experimental tunneling data of phonons, photons, and electrons display a universal scattering time at the tunneling barrier front, and v) the properties of evanescent, i.e. tunneling modes is not compatible with the special theory of relativity.

He says further: According to the special theory of relativity the total energy W of a particle is given by the relation:

$$W^2 = (\hbar Kc)^2 + (m_\circ c^2)^2 \qquad (1)$$

Where $m_\circ$ is the rest mass. Evanescent and tunneling modes with purely imaginary K violate this relation. Quantum mechanics and classical electrodynamics result in a negative energy for particles inside a barrier. For evanescent modes, this is the electric energy:

$$W_{el} = \frac{1}{2}\epsilon E^2 V < 0$$

Where E is the electric field and V the volume. $\epsilon = n^2$ is the negative dielectric function in the barrier. Tunneling and evanescent modes violate the Einstein relationship eq (1). As discussed in former articles, the primitive causality, i.e. effect follows cause, is guaranteed. Tunneled signals have been detected at a time shorter than that of vacuum-traveled signals. Measured signal velocities were up to $5 \cdot c$.

In a review article on the experimental proof of quantum teleportation, the authors made the statement: Einstein among many other distinguished physicists, could simply not accept this spooky action at a distance. But this property of entangled states has now been demonstrated by numerous experiments. We think this statement applies as well to the strange properties of zero-time barrier space and superluminal signal velocity in tunneling.

As one can say, all the strange properties of tunneling might be magnified on a large scale in a SQUID. And there is evidence of this in a paper [3] by Shao-Xiong Li, Yang Yu, Yu Zhang, Wei Qiu, and Siyuan Han and Zhen Wang, 'Quantitative study of Macroscopic Quantum Tunneling in a dc SQUID: A system with two degrees of freedom'. They say in their abstract:

To test whether the theory of macroscopic quantum tunneling (MQT) applies to systems with 2 degrees of freedom, we experimentally investigated the switching current distribution of a dc SQUID. Using sample parameters determined from measurements at T=4.6K, we are able to make a quantitative comparison to the theories from 8 mK to 4.2 K. The excellent agreement between the data and the MQT theory demonstrates that tunneling from the zero-voltage state of the dc SQUID is well described by quantum mechanics.

This is proof that quantum tunneling in SQUID is macroscopic, and all the strange properties of tunneling will be magnified.

CONCLUSIONS

It might be impossible to induce electrons in orbit around an element to orbit faster than light and achieve a form of time travel where that element might propagate into the past. It seems the only way to get electrons to become faster than light is in tunneling in SQUID, which would amplify the macroscopic scale properties of nonlocality, faster than light, the electron becomes invisible and virtual. Whatever this amounts to will have to wait until an actual experiment is done, and it can be done now. And the question also remains, would this be a potential form of time travel or teleportation? Would the electron tunneling interact with the SQUID?

REFERENCES

[1] Gunter Nimtz, 'Erratum to: on virtual phonons, photons, and electrons', Found Phys (2010) 40: 1221-1230 Doi 10. 1007/s 10701-010-9503-6

[2] Gunter Nimtz, 'Tunneling violates special relativity', arXiv: 1003.3944v1[quant-Ph] 20 Mar 2010.

[3] Shao-Xiong Li, Yang Yu, Yu Zhang, Wei Qiu and Siyuan Han, Zhen Wang, 'Quantitative study of macroscopic quantum tunneling in a dc SQUID: A system with two degrees of freedom'. Volume 89, Number 9, Physical review letters, 20 August 2002.