qed

https://rationalwiki.org/wiki/Scalar_wave

in physics, a quantity described as "scalar" only contains information about its magnitude. In contrast, a "vector" quantity contains information both about its magnitude and about its direction. By this definition, a "scalar wave" in physics would be defined as any solution to a "scalar wave equation".[4] In reality, this definition is far too general to be useful, and as a result the term "scalar wave" is used exclusively by cranks and peddlers of woo.

Solutions to scalar wave equations are actually quite prevalent (and useful) in physics. Some prominent examples include acoustic (sound) waves, the motion of a taut string being stretched (such as a guitar string being plucked), and the motion of waves in water (such as the ripples from a stone being dropped into a pond). In contrast, electromagnetic waves are vector quantities derived as solutions to a set of vector wave equations (in this case Maxwell's equations).

The concept of a "scalar *field* theory"[5] also exists, and plays an important role in several branches of physics. In comparison, "scalar waves" have never been observed in nature,

https://en.wikipedia.org/wiki/Scalar_field_theory

In theoretical physics, **scalar field theory** can refer to a relativistically invariant classical or quantum theory of scalar fields. A scalar field is invariant under any Lorentz transformation.[1]

The only fundamental scalar quantum field that has been observed in nature is the Higgs field. However, scalar quantum fields feature in the effective field theory descriptions of many physical phenomena. An example is the pion, which is actually a pseudoscalar.[2]

Since they do not involve polarization complications, scalar fields are often the easiest to appreciate second quantization through. For this reason, scalar field theories are often used for purposes of introduction of novel concepts and techniques.[3]

https://phas.ubc.ca/~mav/p526/lec7.pdf

Scalar field theory
Lec7

https://physics.stackexchange.com/questions/41065/the-lagrangian-in-scalar-field-theory **The Lagrangian in Scalar Field Theory**

looks like EM radiation
E. T. Whittaker was a prominent British mathematician who published two papers of interest in this matter: 1) a general analysis of force fields into constituent fields -- differentiated into "undulatory", wave-disturbance propagation, longitudinal in character; and 2) an analysis of electrons as being characterized by two scalar potential functions. [29, 30] His work successfully pre-dates the experimental work of Y. Aharanov and D. Bohm who demonstrated that in the total absence of electromagnetic force fields, the potentials remain and can

interfere at a distance to produce real effects of charged particle systems. Force fields are actually effects generated from potentials.

Google ET whittaker

Sir Edmund Taylor Whittaker FRS FRSE LLD was a British mathematician who contributed widely to applied mathematics, mathematical physics, and the theory of special functions. -Wiki

References:

EM waves

1 Aharonov, Y. and D. Bohm. Significance of electromagnetic potentials in the quantum theory. Physical Review, Second series. Vol. 115, Number 3., August 1, 1959. p. 485-491. [In the total absence of electromagnetic force fields, the potentials remain and can interfere at a distance to produce real effects of charged particle systems. Forced fields are actually effects generated from potentials. See: Whittaker's two papers and research by T. E. Bearden on radioactive neutralization.]

Bio energy caduceus

25 Rein, Glen. Utilization of a cell culture bioassay for measuring quantum fields generated from a modified Caduceus Coil. In: Proceedings of the 26th Intersociety Energy Conversion Engineering Conference, Boston, Massachusetts. IECEC, c/o American Nuclear Society. August, 1991. 4 pages. [Specific details regarding protocol and procedure used for modulation of radioactivity].

Standing scalar potential wave related to EM waves

29 Whittaker, E. T.. On the partial differential equations of mathematical physics. Mathematische Annalen. Vol. 57,. 1903. p. 333-355. [Demonstrates that a standing scalar potential wave can be decomposed into a special set of directional electromagnetic waves that convolute into a standing scalar potential wave. As a corollary, then, a set of bi-directional electromagnetic waves -- stress waves -- can be constructed to form such a wave in space. Whittaker's wave represents a standing wave of variation in the local curvature of vacuum.]

I see no reference to “standing scalar potential wave” in this paper; rather, it is a theory of gravity which behaves in some respect to an EM wave. Relates to idea of luminous ether; uses generalized Bessel functions

30 Whittaker, E. T.. On an expression of the electromagnetic field due to electrons by means of two scalar potential functions. Proceedings of the London Mathematical Society. Vol. 1. 1904. p. 367-72. [Shows how to turn a standing scalar potential wave back into electromagnetic energy, even at a distance, by scalar potential interferometry, anticipating and greatly expanding the famous Aharonov-Bohm effect, predating the modern (Bohm) hidden variable theory of quantum potentials.

http://pacenet.homestead.com/Transmutation.html not working

http://www.cheniere.org

http://www.cheniere.org/misc/Whittak/ORIw1903.pdf

.. On the partial differential equations of mathematical physics

Saved locally as whit-partial-difew-1903

http://www.cheniere.org/misc/Whittak/whit1904.pdf

On an expression of the electromagnetic field due to electrons

ON AN EXPRESSION OF THE ELECTROMAGNETIC FIELDDUE TO ELECTRONS BY MEANS OF TWO SCALARPOTENTIAL FUNCTIONS

Local file: whit-scalar-potential-1904.pdf

https://www.reed.edu/physics/faculty/wheeler/documents/Quantum%20Mechanics/Miscellaneous%20Essays/Whittaker.pdf

E. T. WHITTAKER'S QUANTUM FORMALISM

Local file: whittaker.pdf

"Scalar Energy" Controversy

Updated 12/12/2010

Subset: tesla transverse and longitudinal.doc

No resolution is attempted, but rather various, perhaps conflicting perspectives, are brought together.

"Scalar Energy", scalar fields, Einstein and Maxwell

Definitions

Scalar quantities, such as temperature and temperature of a gas, are characterized by magnitude alone. Vector quantities, such as wind velocity, are characterized by magnitude and direction.

However, "scalar" also seems to be associated with static, or non-Hertzian phenomena. according to http://pacenet.homestead.com/Transmutation.html , Wilbert Brockhouse Smith, a major player in advancing the technical aspects of radio and television broadcasting in Canada, is said to have believed counter-wound coils, in which the EM field is cancelled out, were producing, in summation, a "scalar" field -- a non-Hertzian phenomenon.

“Scalar waves”; also called "non-*Maxwellian waves*", or "*Teslawellen*" (tr., "Tesla waves"), as distinct from the common scalar fields, such as temperature and pressure of a gas, and electric potential (voltage) [1] are said to often be defined as "electromagnetic longitudinal waves". [2]

However, “scalar” and “wave”, in the Smith sense, seems to be a contradiction, and electromagnetic longitudinal waves can have frequency, as sound waves, also longitudinal, have frequency.

https://lifeenergysolutions.com/scalar-waves/
Nikola Tesla called the powerful non-Hertzian energy (without frequencies) Scalar. A new era in Science was born. In the 1920’s Einstein referenced to these scalar energies.
Scalar waves also referred to as Tesla Waves or Longitudinal Waves are capable of penetrating any solid object including Faraday Cages.

https://timesofindia.indiatimes.com/What-is-scalar-energy-What-are-scalar-pendants/articleshow/5680972.cms
These new waves of **energy** are called “longitudinal” EM (electromagnetism) to distinguish them from “transverse” EM. **Scalar energy** was first announced by Thomas E Bearden.Mar 14, 2010

non-hertzian coils

In the 1960's, the Canadian engineer, Wilbert Brockhouse Smith, a major player in advancing the technical aspects of radio and television broadcasting in Canada, began experimenting with Caduceus coils and noted that this counterwinding set-up produced anomalous effects and proposed that other experimenters attempt to follow this new area of investigation. These coils became popularly known as the "Smith Coils" and he believed that they were producing, in summation, a "scalar" field -- a non-Hertzian phenomenon. It is now known that similar non-Hertzian phenomena may also be obtained by mobius, and bi-filar coils which oppose their alternating currents by virtue of their unique geometry. The resultant of all electromagnetic energy is to sum to zero in accordance with Newton's third law, thereby orthorotating the zero-point-energy into our 3-space…

While some attribute great significance to these waves, they are apparently ignored by mainstream science.

quantum electrodynamics or QED, can explain a vast range of phenomena, and has arguably been tested to be more accurate than any other physical theory, and interestingly, It predicts not only conventional transverse EM waves, but also two non-conventional EM waves.

The first kind is a longitudinal wave in which the electric field points along the direction of motion, rather like a sound wave in air. The second kind, called a temporal mode, has no magnetic field. Instead, it is a wave of pure electric potential, or voltage. Like all quantum entities, these waves come in particle packets, forming two new kinds of photons. (but note the theoretical quantizing of photons is a tricky business.

As we have never actually seen either of these alien photons in reality,

longitudinal do exist in confined space !!

physicists found a way to hide them. They are spirited away using a mathematical fix called the Lorenz condition, which means that all their attributes are always equal and opposite, cancelling each other out exactly.

http://www.newscientist.com/article/mg21428671.800-dark-matter-dark-energy-dark-magnetism.html?full=true
04 June 2012 by Stephen Battersby

Numerous websites attribute “scalar energy” to Maxwell and that Einstein acknowledged “scalar energy”. [3]

Maxwell’s original equations referred to electrostatic scalar potential and magnetic scalar potential, as well as magnetic vector potential, and are not included in the standard set of four Maxwell’s equations. Although vector potential corresponds to an angular momentum in a dynamic system, scalar quantities were associated with electrostatics, not dynamic systems in time. [4]

Google searches of “Einstein scalar energy” yield only a connection between Einstein and scalar field theory in mathematical cosmological theories. [5]

Google Einstein and scalar field theory

http://en.wikipedia.org/wiki/Scalar_field_theory
states that No fundamental scalar fields have been observed in nature.??

http://en.wikipedia.org/wiki/Scalar_field
Examples used in physics include the temperature distribution throughout space, the pressure distribution in a fluid, and spin-zero quantum fields, such as the Higgs field. These fields are the subject of scalar field theory

Longitudinal Electromagnetic Waves

Gerhard Bruhn, of Darmstadt University of Technology, Germany, writing for the Journal of Scientific Investigation, argues that longitudinal electromagnetic waves do not exist. The argument is based on the fact that EM waves have to satisfy both the wave equation and Maxwell’s laws, which Bruhn assumes to be the standard four equation “edited” version of Maxwell’s laws. Since both electric and magnetic fields are involved, the resulting wave can only be transverse.[6]

Interestingly, according to current mainstream physics, Maxwell's equations do lead to the appearance of longitudinal waves under some circumstances; in either guided waves or plasma waves. [7] Both guided and plasma waves exist in the earth’s geomagnetic field. [8]

The longitudinal mode of a resonant cavity is a particular guided standing wave pattern formed by waves confined in a cavity. The longitudinal modes correspond to the wavelengths of the wave which are reinforced by constructive interference after many reflections from the cavity's reflecting surfaces.

The Schumann resonance is an example of a cavity resonance, as may be inferred from the American Journal of Physics paper: *Schumann's resonances: A particular example of a spherical resonant cavity.* [9]

Wikipedia [10] says: "The Schumann Resonance is a set of terrestrial stationary waves in the extremely low frequency (ELF) portion of the Earth's electromagnetic field spectrum. Lower frequencies and those at or below longwave bands travel most efficiently as a longitudinal wave and create stationary waves.

The fundamental wavelength of the SR is equal to the circumference of the earth. This wave would travel around the earth in about 0.13 seconds, or 7.8 cycles around the earth in one second (Hz) The backyardastronomy site provides an illustration of the wave, reproduced below. [11]

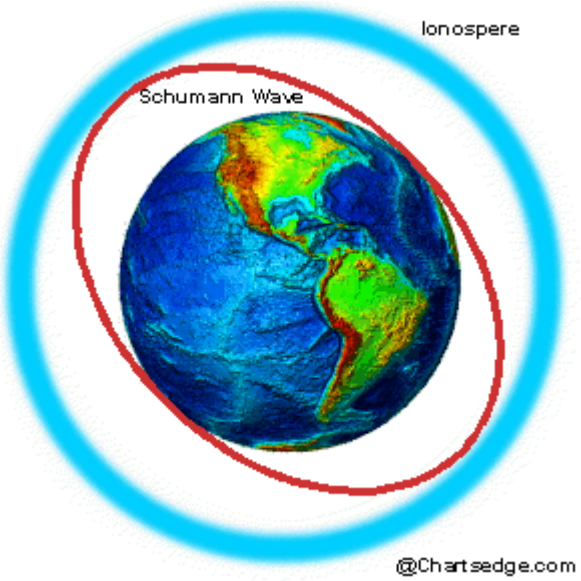

Image from: http://www.backyardastronomy.net/schumann_resonance.html

Confusion might be minimized by noting 1) the diagram is a cross section of the spherical wave; 2) the direction of propagation of the EM field is radial, thus the wave is in longitudinal motion; Although the wave "moves" and its harmonics have frequencies, it is considered "stationary" because it is confined to the cavity between the earth and ionosphere.

Lightning as well as the aurora and ionosphere form plasmas, [12] and plasma waves such as the aurora in the earth's magnetosphere may under certain circumstances be longitudinal. [13] It has also been suggested that the earth's core may be plasma like. [14]

Magnetic Vector Potential and the AB effect

The four "editied" Maxwell's equations, which mainstream physics (and Bruhn) uses, omits scalar and vector potentials. On the other hand, it has been acknowledged that vector potential is more basic than electric or magnetic fields, which are its manifestation [15].

The web site Montalk.net shows how the motion of an electro-magnetic wave can be represented by the magnetic vector potential. Since there is only one fundamental field, this website argues that an "aether" medium is indeed needed for the field to propagate. (In classical EM theory, an "aether" medium was dismissed as unnecessary since the electric and magnetic fields mutually propagate one another.) The website also argues that, given the "aether" and the vector potential, an electric field may be propagated without a magnetic field under some circumstances, which is sometimes called a "curl-free [gradient-free] vector potential" [16]. The result

is a longitudinal EM wave. An example would be a flat plate radiating alternating (AC) EM. The website also suggests these are what Maxwell meant when he referred to "displacement current".] [17]

The "curl-free vector potential field" has been scientifically validated, not only because a patent has been granted for using this field to transmit EM information fields [18], but also because the concept is written about in an Indian technical journal, Pramana. [19]

Chen Ning Yang, of the Institute for Theoretical Physics, State University of New York, confirms that Maxwell identified his vector potential with Faraday's electrotonic state. He also notes that the vector and scalar potentials do have measurable meaning in quantum mechanics, and should not be completely eliminated.. [20]
This fact has been confirmed in other papers, including one from Caltech. [21]

In 1959, Yakir Aharonov and David Bohm proposed that a moving electron can have its phase altered (ie, a quantum effect) by the vector potential of the electromagnetic field of a nearby object, without actually encountering the object or its magnetic field. Using an advanced form of electron microscope, in several sets of tests, Akira Tonomura demonstrated conclusively in 1982 and 1986 that the Aharonov-Bohm (AB) effect was real. "Physicists may differ in their interpretation of the AB effect, but no one doubts its existence". [22]

Dr. Bruhn, who has denied the existence of longitudinal waves, has also argued that vector potential cannot exist in the physical world, because its effects cancel out.

On the other hand, it is widely believed within the scientific community that gravity accounts for inertial effects, and if so, it must be due to the vector potential term of the gravito-electric force. [23]

Dr. Bruhn also argues that "The AB-effect does not depend on "super world" properties of vector potential A that are not visible in the physical world – the knowledge of H (the magnetic field) is sufficient." [24]

The AB-effect is real in the quantum world, and possibly by extension, in the macroscopic biological world. Vector potential has a measurable meaning in quantum physics, and also appears to be manifest in the macroscopic world. If, as some scientists insist, macroscopic quantum systems exist in the form of biological systems, perhaps vector potential also has some validity in the macroscopic biological world.

Glen Rein's coil experiments: the "quantum potential field"

Since the AB effect is the result of vector potential in the

Glen Rein places Scalar waves or fields into the same group as longitudinal, force-free, time reversed, tachyon, and solitary waves. He uses the inclusive term "quantum potential field" to refer to any of these fields, which he calls subtle energy fields. [25] He has used various coil configurations to access these subtle energy fields:

Both mobius and caduceus coils [see glossery.doc or glossery.htm] are described in sources as having unusual properties, including the production of "scalar waves". Rein notes that mobius and caduceus electrical coils result in local anomalies with respect to energy, temperature, inertia, mass and gravity measurements.

May these anomalies be related to the temperature/ph anomalies Tiller noticed?

The annals of free energy research abound with legendary anomalies from these coils. [26]

The geometry of mobius/bifilar and caduceus coil windings is very different. The caduceus coil windings precludes complete cancellation of opposing currents. Rein notes that even the fields associated with the self canceling mobius coil will have a unique and complex set of harmonics based on constructive and destructive interference of certain frequencies. In short, the fields produced by both Caduceus and Mobius coils are complex and not easily modeled mathematically. What part of these complex fields represent effective subtle energies; and are the subtle energies of both types of coils identical? How do we know the resulting effective field is "scalar"?

A bifilar coil, [see Glossery] using more simplified geometric windings, was used to determine the relative roles of quantum, potential, and EM fields. William Tiller of Stanford provided calculations for the strength of the magnetic (B) and vector potential (A) fields.

What about the E (electric) field?
Both were found to be very small. 10-12 for B and 10-14 for A. The primary field present then, was the scalar, or quantum field. In spite of this, the bifilar coil produced a small increase in UV absorption, and from this Glen Rein concludes that quantum fields, aka "scalar waves" exist, are distinct from B (EM) and A (potential) fields, and are able to induce a measurable macroscopic effect on water.

Tom Bearden and "scalar EM waves"
Tom Bearden is the most outspoken of the scalar wave advocates, however, he is a rather controversial figure. " Vector fields can evidently be assembled by properly interfering scalar potentials (predicted in 1903-4 by mathematician E.T. Whittaker and probably engineered by the Soviets)." Conversely, scalar fields can be created by destructively interfering vector fields, in a nonlinear medium. Varying the vector components rhythmically produces what Bearden calls "scalar waves". These are described as ripples in spacetime, and are said to induce a wavelike stress in the "aether" [27] (is that the vacuum or the ZPF?)

Difference between ZPF and Vacuum?

During the cold war, Bearden and Eldon Byrd, both maverick physicists, are said to have discovered the Russian development of scalar standing energy as a possible weapon.
Bearden alleges that T. H. Morey successfully produced a "Prigogine" transistor; ie, an over unity energy devise, whose existence is justified by Ilya Prigogine's conception of Dissipative Structures, in which a structure can become self organizing if it has an incoming supply of material and energy. Prigogine's theory, for which he was awarded a Nobel Prize in 1977, allows for a decrease in entropy in far from equilibrium conditions. [28] Bearden asserts that Morey assembled a collection of these transistors to form a "scalar interferometer" and collector of the disintegrated "energy" (virtual particle flux) from the quantum vacuum. [29] So Bearden's "scalar energy" appears to be energy from the quantum vacuum, or Zero Point Energy.

Bearden announced the arrival of the over-unity "Motionless Electromagnetic Generator" (MEG) in 2002. This devise, patented by Bearden and four others, is said to function by extraction of vacuum (ZP) energy, presumably from scalar interferometry, but its performance has apparently never been independently verified. [30] "Scalar waves" have now been associated with the fringe science areas of UFOs and EVP. (Electronic Voice Phenomena) [31]

Teslar wristwatches
Drs. Robert Beck, Robert Becker, Eldon Byrd, Andrija Puharich, Dr. Victor Adamenko and others confirmed the negative health effects of extremely low EM frequencies (ELF). According to Valerie Hunt, the result was a milli-volt scalar wave generator which was refined and commercialized as a "Teslar" (after Nikola Tesla) shielding wrist watch by the ELF company. This wristwatch is said to protect the wearer from destructive environmental radiation. [32] Interestingly, Dr. Glen Rein in the US, and Dr. Anthony Scott-Morley in England have provided data supporting the effectiveness of this devise. References show Rein associates the watch with

scalar energy, while this study has found no such scalar references by Scott-Moreley. [33] Randi.org quack-busters notes the endorsements by four MD/PhDs should be "seriously looked into." Aside from complaining about the price of these devises, no data disproving the endorsements is provided. [34]

Several references state the watch produces an 8 Hertz oscillation, which corresponds to the fundamental frequency (7.8 Hz) of the Schumann Resonance. [35]

Valerie Hunt and Bioscalar/Bio-Scalar Energy

Valerie Hunt has climbed aboard the Bearden scalar energy bandwagon, coining the term "Bio-Scalar energy". Unfortunately, most internet sources refer to Hunt's paper, and many are commercial. Even chapter 10 of the book *Vibrational Energy Healing*, [36] titled Bio-Scalar Energy merely quotes from Hunt's paper, *Bioscalar Energy: The Healing Power* Dr Valerie Hunt 2000 [37]. With all due respect to Dr. Hunt, although she presents some interesting information, her account of bio-scalar energy does not seem to hang together very well.

A brief synopsys: Hunt was struck by the lack of EM healing energy, typical of healers, emanating from psychic surgeons. She thought of Tom Bearden, Eldon Byrd, and scalar energy, which consists of a standing wave resulting from the cancellation of opposing EM waves. She found that when the mind is focused, it can direct EM waves to enter the body from opposite sides, creating scalar, or bio-scalar energy. She then states that bio-scalar energy is the sustained energy which all successful healers are able to manipulate. Bearden believes that scalar energy resides in the nucleus of the atom and carries information. Your intention manipulates the scalar energy which has pooled from the atoms of the body. At the Max Planck Institute in Germany, in 1950, it was found that when a mechanically created scalar wave was directed into a petrie dish of living cells, the cells separated, and became more active. Rein questioned how much of the effect on bio-tissue could be uniquely attributed to the scalar wave since it exists in a larger EM field.

"Bio-Scalar Energy" here corresponds nicely to Glen Rein's quantum potential field, for which he has apparently supplied hard data.

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[1] http://www.globalspec.com/reference/59895/203279/2-5-scalar-and-vector-fields

[2] Though sometimes they are just assumed to be the Zero Point Field. http://peswiki.com/index.php/PowerPedia:Scalar_field_theory

[3] Eg: http://www.scribd.com/doc/15815504/An-Introduction-to-Scalar-Energy-Part-1-History-and-Properties, http://hubpages.com/hub/Scalar-Energy, http://alberteinstein.strips4you.com/?p=4908.

[4] http://en.wikipedia.org/wiki/Magnetic_potential .

[5] For example:

Exact solutions of Einstein and Einstein-scalar equations in 2 + 1 dimensions
http://www.springerlink.com/content/9459347375v57388/

Generating Minimally Coupled Einstein-Scalar Field Solutions from Vacuum Solutions with Arbitrary Cosmological Constant
http://arxiv.org/abs/0705.4372

Dark Energy:
http://en.wikipedia.org/wiki/Dark_energy

Scalar Field Theory
http://en.wikipedia.org/wiki/Scalar_field_theory

[6] http://www.scientificexploration.org/journal/jse_16_3_bruhn.pdf

[7] http://en.wikipedia.org/wiki/Longitudinal_wave

[8] See Subtle Energy, Science, and Health ..\human_energy_field\subtle_energy.doc

[9] American Journal of Physics Volume 72 issue 5 papers
http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=AJPIAS000072000005000704000001&idtype=cvips&gifs=yes&ref=no

[10] http://en.wikipedia.org/wiki/Terrestrial_stationary_waves see also http://en.wikipedia.org/wiki/Longitudinal_mode

[11] http://www.backyardastronomy.net/schumann_resonance.html
http://en.wikipedia.org/wiki/Longitudinal_wave. Recently, Haifeng Wang et al. proposed a method that can generate longitudinal electromagnetic (light) wave in free space, and this wave can propagate without divergence for a few wavelengths.

[12] http://www.plasma-universe.com/Plasma-Universe.com; http://www.springerlink.com/content/l7072q3w5615583g/

[13] http://en.wikipedia.org/wiki/Longitudinal_wave

[14] http://www.wincom.net/earthexp/n/owen.htm

[15] Cyril Smith, an electrical engineer from the UK: *Is a Living System a Macroscopic Quantum System?* Cyril W. Smith, Department of Electronic and Electrical Engineering, University of Salford, Salford M5 4WT, England.Frontier Perspectives Fall/Winter 1998 pp 9-15 Notes in htm

Also see http://en.wikipedia.org/wiki/Introduction_to_gauge_theory which makes the same statement.

[16] http://www.montalk.net/notes/transverse-waves
curl-free vector potential

According to H.M. Schey (*div grad curl and all that an informal text on vector calculus*), the EM (magnetic and electric) fields depend not only on vector, but also scalar potential:

Magnetic field = del cross (vector potential) = del cross A = curl A
Electric field = -del (scalar potential) - partial of (vector potential) with respect to time

The apparent conflict between Schey and Montalk is resolved by noting that scalar (electric) potential only exists if curl A = 0; ie there is no magnetic field.

The term "vector potential" is used in electromagnetic theory and scalar (electric) potential in electrostatics only.

http://scienceray.com/physics/vector-potential-and-scalar-potential-made-clear/

On the other hand, there is also no magnetic field in a curl free magnetic vector potential.
A scalar magnetic potential also exists, but applies only to sources ?
See also http://www.grc.nasa.gov/WWW/K-12/Numbers/Math/Mathematical_Thinking/maxwells_equations.htm
See also ..\appendix\vectorp.doc or ..\appendix\vectorp.htm

[17] http://www.montalk.net/notes/longitudinal-waves
However, Basil Mahon's biography *The Man Who Changed Everything* suggests displacement current is merely the "leap frog" interaction of the electric and magnetic fields.

[18] A system for transmission of EM information using a curl-free magnetic vector potential radiation field: http://www.freepatentsonline.com/EP0050523.html

[19] Observability of the effects of curl-free magnetic vector potential on the macroscale and the nature of the 'transition amplitude wave'

[20] *Vector Potential, Gauge Field and Connection on a Fiber Bundle* http://qhxb.lib.tsinghua.edu.cn/myweb/english/98n1/980101.html

[21] http://ww.cithep.caltech.edu/~fcp/physics/quantumMechanics/paths/paths.pdf see chapter 3: Is the Vector Potential Real?

[22] Proceedings of the National Academy of Sciences: Profile of Akira Tonomura

[23] http://physics.fullerton.edu/~jimw/general/inertia/index.htm

[24] http://www.mathematik.tu-darmstadt.de/~bruhn/Commentary-Oschman.htm

http://www.springerlink.com/content/056g2m3328p29j26/

Abstract
We discuss here the prediction, based on a formalism by the author, on the observable effects of a curl-free magnetic vector potential on the macroscale as against the microscale of the Aharonov-Bohm effect. A new quantum concept — the 'transition amplitude wave' — postulated in the formalism has already been shown to exhibit matter wave manifestations in the form of one-dimensional interference effects on the macroscale. It was predicted by the formalism that the same entity would lead to the detection of a curl-free magnetic vector potential on the macroscale. We describe here the manner of generation of this quantum entity in an inelastic scattering episode and work out an algorithm to observe this radically new phenomenon, the detection of a curl-free magnetic vector potential on the macroscale. We determine the various characteristic features of such an observation which can then be looked for experimentally so as to verify the predicted effect, establishing thereby the physical reality of the new quantum entity, and to fully validate the formalism predicting it. It is also shown that this 'transition amplitude wave' can be regarded as a novel kind of 'quasiparticle' excited in the charged particle trajectory as a consequence of the scattering episode.

[25] Glen Rein *The Biological Effects of Quantum Fields* www.item-bioenergy.com/infocenter/BiologicalEffectsofQuantumFields.pdf

[26] http://www.unexplainable.net/artman/publish/article_1746.shtml

[27] http://www.nowpublic.com/scalar-energy

[28] http://en.wikipedia.org/wiki/Ilya_Prigogine

[29] http://www.cheniere.org/books/analysis/history.htm see also http://www.cheniere.org/correspondence/110702a.htm scalar waves; http://www.cheniere.org/books/part1/teslaweapons.htm

[30] http://en.wikipedia.org/wiki/Motionless_electromagnetic_generator

[31] http://www.nowpublic.com/strange/tom-bearden-scalar-wave-ufo-propulsion-reverse-engineering http://www.teslatech.info/ttstore/articles/york/esv1n4.htm

[32] http://scalarnews.com/ http://www.teslar-watch.com/

[33] http://altered-state.com/index2.htm?/teslartemp/sci.htm ; http://books.google.com/books?id=xUJv30e0bAMC&pg=PA212&lpg=PA212&dq=Glen+Rein+teslar+watch&source=bl&ots=xwP3V-HbFj&sig=Q9rDlsHBPWT2bjWKpKLoJ5ZiyjE&hl=en&ei=feEeTMHvJMmknQfAse2BDg&sa=X&oi=book_result&ct=result&resnum=6&ved=0CCEQ6AEwBQ#v=onepage&q=Glen%20Rein%20teslar%20watch&f=false

[34] http://www.randi.org/jr/013103.html

[35] http://altered-state.com/index2.htm?/teslartemp/sci.htm ; http://www.teslar-watch.com/

http://books.google.com/books?id=xUJv30e0bAMC&pg=PA212&lpg=PA212&dq=Glen+Rein+teslar+watch&source=bl&ots=xwP3V-HbFj&sig=Q9rDlsHBPWT2bjWKpKLoJ5ZiyjE&hl=en&ei=feEeTMHvJMmknQfAse2BDg&sa=X&oi=book_result&ct=result&resnum=6&ved=0CCEQ6AEwBQ#v=onepage&q=Glen%20Rein%20teslar%20watch&f=false

http://thesexyscience.blogspot.com/2010/04/yoga-pants-and-teslar-watchget-um.html

[36] See http://books.google.com/books?id=d91ooIwaqdYC&pg=PA169&lpg=PA169&dq=bioscalar+energy&source=bl&ots=aeih2x2Ogd&sig=vGmMow-J5g0KGw1k2HL_5xRw8Lo&hl=en&ei=k9MdTNzJNojaNsrSuZMF&sa=X&oi=book_result&ct=result&resnum=5&ved=0CBgQ6AEwBDgK#v=onepage&q&f=false

[37] http://dashingdunes.com/wp-content/uploads/2009/05/BioscalarEnergy.pdf