

GUNIFY

Geometry

This paper is about geometry

Torus, Vortex is a specific geometry theory/aether/electron models,

magnetic vector potential/gauge theory is geometric

toroidal vector potential fields are discussed

a moving electron is said to produce an EM field. But if an electron is really a vortex of energy, how does this effect the theory? ie. there is no "moving" electron.

Structure, or geometry, has been important in the historical unfolding of our understanding of nature through the disciplines of natural philosophy and science.

In 1960, John A. Wheeler wished to lay the proper conceptual and mathematical foundation for quantum gravity, and also to unify gravitation with electromagnetism. Wheeler's vision for accomplishing these goals can be described as a program of reducing physics to geometry. ¹

According to David Jou I Mirabent ², the Aharonov–Bohm (AB) effect ³ was the starting point of a continuous presence of geometry and topology in quantum physics. His point is that quantum physics interactions are described by potential fields and these objects have a fundamental meaning from the point of view of geometry and topology.

More specifically, as xxxxx notes,

Vector potential is center stage in not only electromagnetism, but electro weak and strong interactions.

Hermann Weyl's 1918 paper introduced the geometric interpretation of electromagnetism

potential fields are intimately associated with gauge symmetry. Gauge symmetry is intrinsically geometric, because it is all about spatial derivatives and changes in geometric scale.

Using the primacy of the four component vector potential A_μ , the homogeneous

Maxwell's equations can be derived from differential geometry by using a gauge transformation.

Thus gauge invariance determines the type of interaction; here, the inclusion of the vector potential.

This is called the gauge principle, and the four element vector potential A_μ , is called the gauge field or gauge potential. Gauge invariance is also called gauge symmetry. In electromagnetism A is the space-time vector potential representing the photon field, while in electroweak theory A represents the intermediate vector bosons W^\pm and Z^0 fields; in the strong interaction, A represents the colored gluon fields.

String Theory in a Nutshell google book
for closed strings, the one loop vacuum amplitude comes from the torus
torus partition function of CFT
torus partition function for single non-compact boson

<http://superstringtheory.com/experm/exper2a.html>
the standard model:

Today, three of the observed forces in Nature have been successfully described as theories of quantum gauge symmetry, and it turns out that these three forces can be described in terms of unitary groups of different dimensions. Physicists write this combination of gauge groups as $SU(3) \times SU(2) \times U(1)$. All three involve the vector potential.

Forces and symmetries			
Force	Gauge bosons	Gauge group	Details
Electromagnetism	1 Photon	The unbroken U(1) combination of SU(2)xU(1) symmetry	Photon is massless and neutral, couples to electric charge, force is infinite range, theory is called Quantum Electrodynamics, or QED for short.
Weak nuclear force	W^+, W^-, Z	The broken combination of SU(2)xU(1) symmetry	Gauge symmetry is hidden by interaction with scalar particle called Higgs , W and Z are massive, have weak and electric charge, interaction is short range
Strong nuclear force	8 Gluons	SU(3)	Gluon is massless but self-interacting. Charge is called quark color, theory is called Quantum Chromodynamics, or QCD for short.

torus and string theory

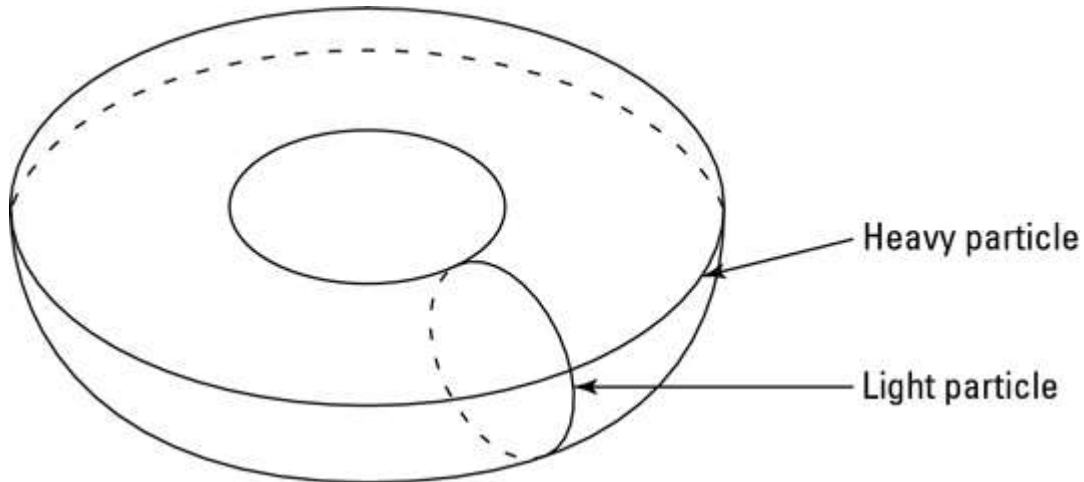
One of the major goals of current string theory research is to construct a solution of string theory that contains the particles that actually exist in our universe.

String theory started out as a theory to explain particles, such as hadrons, as the different higher vibrational modes of a string. In most current formulations of string theory, the matter observed in our universe comes from the lowest-energy vibrations of strings and branes. (The higher-energy vibrations represent more energetic particles that don't currently exist in our universe.)

The mass of these fundamental particles comes from the ways that these string and branes are wrapped in the extra dimensions that are compactified within the theory, in ways that are rather messy and detailed.

But the mass of fundamental particles is supposed to be accounted for by the Higgs boson.

For an example, consider a simplified case where the extra dimensions are curled up in the shape of a donut (called a *torus* by mathematicians and physicists), as in this figure.



The compactified dimensions in string theory are much more elaborate than a simple torus, but they work the same way in principle.

<http://www.dummies.com/how-to/content/what-string-theory-attempts-to-accomplish.html>

Toroid, Vortex, and Knot

An important set of interrelated geometric figures are the toroid, vortex, and knot.

$$\leftarrow \text{-----} | \text{-----} \rightarrow$$

$2R$

$$|r|$$

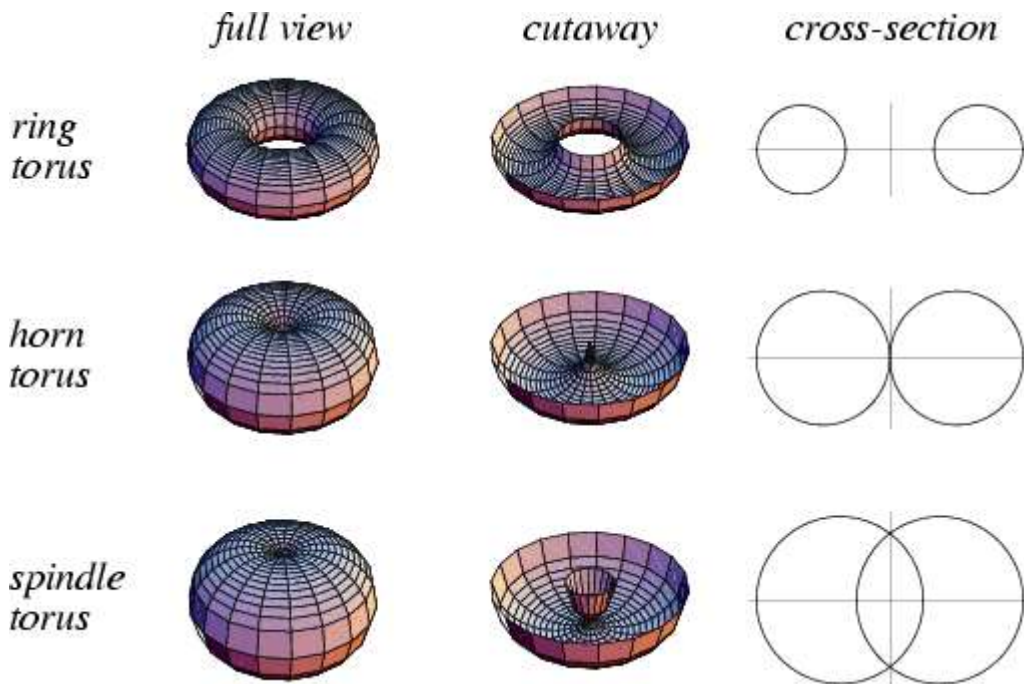


Image from <http://www.harmonicresolution.com/Toroidal%20Space.htm>

A “Torus” is simply a donut shape, which may be of several types, including ring, horn, or spindle.

As the distance $2R$ between the two circular “donut” cross sections of radius r decreases, the ring torus becomes a spindle torus, and when the distance $2R$ becomes zero, degenerates into a sphere of radius r . When the circular cross section of radius r is zero, the torus devolves into the circle of radius R , or a vortex. ⁴

In precise mathematical language, a knot is an embedding of a circle in 3-dimensional Euclidean space. A circle is a trivial knot. ⁵

A **vortex ring**, also called a **toroidal vortex**, is a region of rotating fluid (or energy) moving through the same or different fluid where the flow pattern takes on a toroidal shape. The movement of the fluid is about the poloidal or circular axis of the doughnut, in a twisting vortex motion. For example, a smoke ring.

Vortex rings were first mathematically analysed by the German physicist Hermann von Helmholtz, in his paper of 1867 *On Integrals of the Hydrodynamical Equations which Express Vortex-motion*.⁶

EM field theory

Conventional EM field theory is based on the assumption that electric and magnetic fields (photons) are generated from moving point charges (electrons) and radiate outward in a spherical manner from their source.

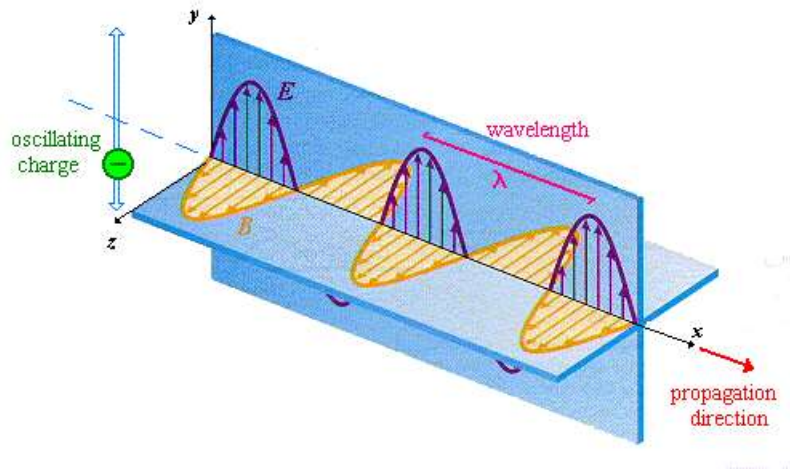


Image from: cbu.edu

Using inaccurate analogies, some have suggested that conventional EM fields are vortices. ⁷ On the other hand, physicists HAVE been able to create twisted (vortex) beams of electromagnetic radiation. ⁸

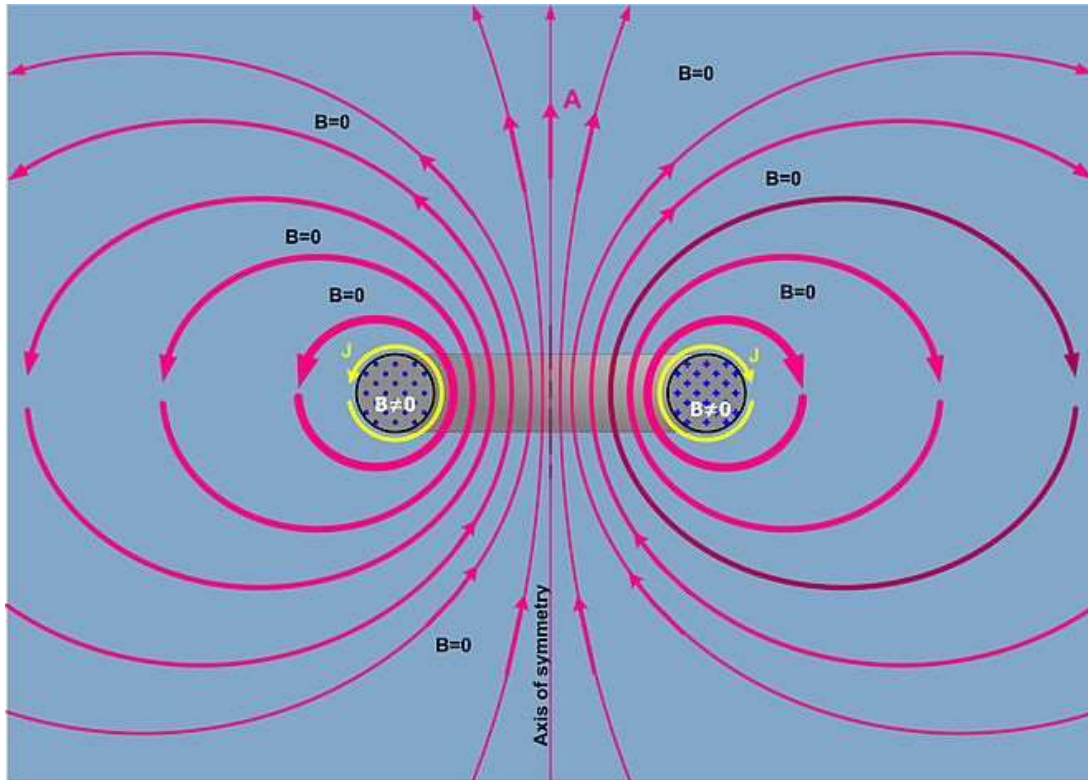
It has been shown that the magnetic vector potential, A , and electrostatic potential, J , are more fundamental than the electric and magnetic fields, since these fields can be mathematically derived from the potentials. ⁹

The web site Montalk.net shows how the motion of a conventional electro-magnetic wave can be represented by the magnetic vector potential. ¹⁰

Toroidal coils

Beltrami proposed and mathematically demonstrated that EM fields could be generated from negative Gaussian curvature potentials, that is, from toroidal shaped potentials. His theory further demonstrated mathematically that the topology of the EM fields generated from toroidal potentials are helicoid (as opposed to spherical). ¹¹

Note that the toroidal magnetic vector potential shown below (A) corresponds to Beltrami's potential field, and is generated in a toroidal transformer coil winding. Also note the magnetic field B is zero outside of the coil windings:



http://en.wikipedia.org/wiki/Toroidal_inductors_and_transformers#Torroidal_Inductor.2FTransformer_and_Magnetic_Vector_Potential

From the discussion on vector potential, when the transformer coil is energized with electricity, it appears that a potential field is generated, which in turn generates the magnetic and electric fields.

Toroidal Coils in Practical Electronics

In electrical technology, a transformer transfers alternating current electrical energy from one circuit, the primary, to another circuit, the secondary, through inductively coupled wire coils. The voltage increase from the primary to secondary circuit is related to the number of wire coil turns in the primary and secondary by the formula $V_s/v_p = N_s/N_p$ Where V_s and V_p are the voltages of the secondary and primary circuits, and N_s and N_p the number of turns of the primary and secondary wire coils respectively. In summary, electrical transformers step up or down the electrical energy of a system.

Frequently the transformer wire is coiled around an iron core ring; a donut shape called a torus, through which a magnetic flux (B) passes.

The toroidal shape has been discovered to be the most efficient way to wind an electrical transformer, as a coil wound in this configuration produces very clean, highly accurate, precise and reliable power. (ref?)¹²

Self Cancelling Toroidal coils

The first application of self-canceling coils was apparently accomplished by Tesla at the turn of the century. Tesla's magnifying transmitter used two coils where ...
[books.google.com/books?isbn=0805814663...](https://books.google.com/books?isbn=0805814663)

Another method for cohering zpe involves abruptly bucking EM fields, as in certain coil windings. When EM fields are in perfect opposition, the field vectors cancel. However, there still exists a stress in the fabric of space and it manifests as a scalar EM potential. Aharonov and Bohm (1959) have shown that the EM potential affects the phase of the quantum mechanical wave function associated with elementary particles. Bearden (1986) has emphasized that the resultant stress is actually a coherence in the zpe and can propagate as scalar waves. [p. 41]

Quest for Zero Point Energy Engineering Principles for "Free Energy" Moray B. King
http://www.bibliotecapleyades.net/ciencia/secret_projects/project122.htm

Vortex Theory of Particles

“Vortex” ideas of particles in natural philosophy were explored in the 17th century by Kepler, Descartes, Leibniz, and Huygens, in the 18th by Swedenborg and Boeković, and in the 19th by Ampere, Fresnel, Kelvin, Rankine, Tait, and many others.

Ampere visualized the ultimate particles as tiny electrical circuits.

***worldsci.org/topics/structure**

In 1867, after observing Scottish physicist Peter Tait's experiments involving smoke rings, William Thomson (Lord Kelvin) concluded that atoms were knots of swirling vortices in the æther, and developed a vortex theory of atoms.

Tait subsequently began listing unique knots in the belief that he was creating a table of elements. He formulated what are now known as the [Tait conjectures](#) on [alternating knots](#), which were proved in the 1990s. Tait's knot tables were subsequently improved upon by C. N. Little and [Thomas Kirkman](#).

Tait's experiments were inspired by a paper of Helmholtz's on [vortex-rings](#) in incompressible fluids.

When the *luminiferous æther* was not detected in the Michelson–Morley experiment of 1887, vortex theory went out of vogue. ¹³

According to the known laws of physics, accelerating charge must radiate, yet in Bohr's famous 1913 model, as in all point particle models, electrons mysteriously accelerate without radiation. According to [*worldsci.org/topics/structure](http://worldsci.org/topics/structure), The non-radiation of moving point charge electrons has been swept under the rug by the entrenched authoritarian physics community, or “big physics”, with the mantra that quantum physics behaves by a different set of rules than classical physics.

In 1915, an English visiting graduate student at Harvard, Alfred L. Parson, presented the first "modern" model of the electron, the "magneton", a toroidal magnetic circuit. Parson intended to improve on Bohr's famous 1913 model of the atom, which depicted electrons as circulating point charges, by "smearing" the charge around the entire circuit.

A circular, or vortex model of electrons would explain why they normally do not radiate energy. In essence, Parson's Magneton was a theory in support of a vortex theory of atoms.

Now, in the early years of the 21st century, alternative physics has returned to Lord Kelvin and Tait's concept of a table of the elements based on vortices, and an interest in modeling of the electron as a vortex has developed.

According to world science.org, most structuralists now claim that the known properties of elementary particles can be determined by the manner in which the various circuits, or vortices comprising particles intertwine; that is, by their "knottedness". By applying a set of rules consistently, some structuralists have reproduced not only properties of particles, but hundreds of characteristics throughout the periodic table.

worldsci.org/topics/structure

The resurgence of an interest in "knottedness" and vortex theory is based in part on a new way of thinking about potentials and the "aether".

Aether

The notion of a static Aether, a mechanical, jelly-like substance, finds its classical origins in Newton. In 19th century physics, the positing of a luminiferous aether was used to reconcile Maxwell's electromagnetic theory and Newtonian mechanics. This inaugurated the brief age of the Classical Aether embraced by Young, Maxwell, Kelvin, Lodge, and Lorentz.

Since light exhibited wave properties, the waves were thought to travel in a "signal-carrying medium" (just as waves of sound or waves in water require a molecular medium). However, the result of the 1887 Case Western Michelson-Morley experiment resulted in the demise of the Classic Static Aether models. ¹⁴

The demise of the classical Aether was facilitated by rise of the field concept - from Faraday, through Maxwell to Einstein and Quantum-Dynamics.

Space is now understood to be permeated by fields propagating even in the vacuum devoid of ordinary matter. The fields may be electromagnetic or gravitational.

Physicists ask: if light is propagated as a wave in the aether, how does quantization of light and absorption spectra occur? ¹⁵

More recently the vacuum itself has been found to be contain energy identified as the Zero-Point Field, (ZPF) and becoming for some the "New Aether".

Glenn Starkman, ironically from Case Western, and colleagues Tom Zlosnik and Pedro Ferreira of the University of Oxford have resurrected the aether concept in a new form in an attempt to solve the puzzle of dark matter, the mysterious substance that was proposed to explain why galaxies seem to contain much more mass than can be accounted for by visible matter. They posit an aether that is a field, rather than a substance, and which pervades space-time. "If you removed everything else in the universe, the aether [as the zero point field] would still be there," says Zlosnik. ¹⁶

Einstein noted that the "special theory of relativity" does not compel us to deny the aether, and in fact employed an aether for his gravitational "special theory of relativity."

Since there is only one fundamental EM field; the magnetic vector potential field A, the web site Montalk.net argues that an "aether" medium is indeed needed for the electromagnetic field to propagate. ¹⁷

Vortex Models of the Electron

Several recent 3-D electron models have some but not all of the electron's known physical parameters.

The Spinning Charged Ring model ¹⁸ is based on classical electrodynamics, and is consistent with the electron's spin and its magnetic moment (to the second order approximation). This extremely thin charged ring (its main radius is the Compton wavelength divided by 2 pi and its ring radius is about 10 –200 meters ¹⁹[2] spins at the speed of light. This model is missing a major characteristic of the electron—its experimentally observed deBroglie wavelength.

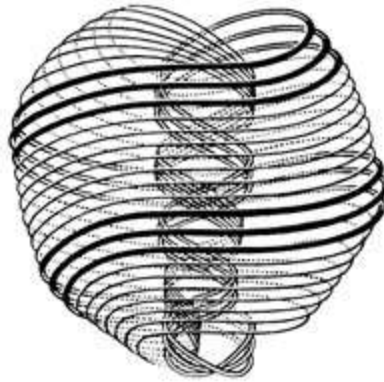
The Compton Radius Vortex model ²⁰ describes the electron as a relativistic vortex rotating at the speed of light, whose radius is the Compton wavelength. In this model there is a physically inaccessible region at a radius less than the Compton wavelength within the electron vortex where there are virtual particles traveling at superluminal velocities, while on a sphere of radius equal to the Compton wavelength there are massless 'particlets' travelling at the speed of light. The electron is considered a quantum black hole ²¹. This model has the electron's spin and magnetic moment (to first order) but also does not account for the deBroglie wavelength.

The Space Resonance model ²² is also related to the Compton wavelength by incoming and outgoing spherically symmetric scalar waves to and from the electron model's center. This model has the electron's spin, 720 deg rotational symmetry and deBroglie wavelength but not its magnetic moment.

ANU

Interestingly, in the esoteric tradition, as represented by Charles Leadbeater, Annie Besant, and the Theosophists in the book Occult Chemistry (1919), the most fundamental particles were described as positive and negative stringed vortices of energy, called "Anu"; the "ultimate atom". The word is Sanskrit for atom or molecule, and

a title of Brahma. Needless to say, this concept of stringed vortices was not the product of advanced mathematics, as was string theory.



“Anu”; the “ultimate atom” ²³

These purported structures would correspond to the hypothetical constituents of quarks, given the “Russian doll” nature of matter. ²⁴

In 1974, physicists Jogesh Pati and Abdus Salam speculated that a small family of particles they called preons could explain the proliferation of quarks and leptons. Although not currently in favor with many physicists, the preon idea has not been ruled out. In 1999, Johan Hansson and his coworkers proposed that three types of preons would suffice to build all the known quarks and leptons. ²⁵

B.G. Sidharth, of the Centre for Applicable Mathematics & Computer Sciences in India, and developer of the Compton Radius Vortex model of the electron writes: “The physical picture is now clear: A particle can be pictured as a [quantum black hole] fluid vortex which is steadily circulating along a ring (or in three dimensions, a spherical shell) with radius equal to the Compton wavelength and with velocity equal to that of light.”

Alternative physicist Frank D. (Tony) Smith, Jr. has used precisely the Leadbeater Theosophist figure of Anu to portray the Compton Radius Vortex. ²⁶

Other Examples of Torus/Vortex Geometry

the electromagnetic field of the heart is toroidal in shape (see subtle energy.doc)

the electromagnetic field of the earth is a torus

The Earth’s Torus

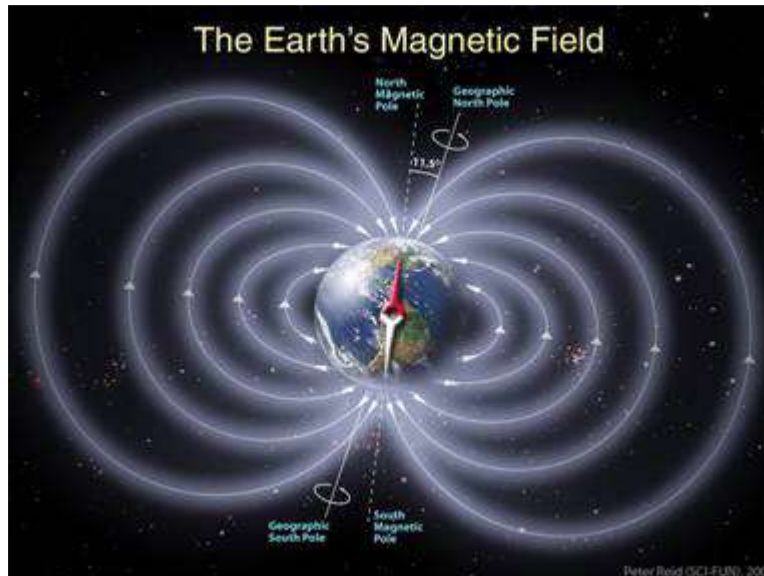


image from: <http://www.cslstl.org/sites/cslstl.drupalgardens.com/files/heart1.pdf>

Without the effect of the solar wind, which distorts its shape, the internal geomagnetic field observed near the earth's surface would be poloidal; ie the lines of force form parallel rings around a toroidal (donut) shape. The field in the core, however, would also contain some lines of force that form a spiral or helix around a toroidal (donut) shape. Again; A poloidal magnetic field is a magnetic field in which the EM energy runs in rings around a torus shape. A toroidal magnetic field is a magnetic field in which the EM energy spirals around a torus shape

<http://www.iki.rssi.ru/mirrors/stern/earthmag/glossary.htm>

http://en.wikipedia.org/wiki/Magnetic_field

DNA Toroids

DNA has three structures: the primary structure is the helix; the secondary structure is the conformation, or winding and unwinding of the helix. The tertiary structure refers to the ability of the DNA helix to fold on itself to form "higher order structures", and it is now well established that one of the higher order structures of DNA is the toroid.

foot note:

Glen Rein proposes that the toroidal shape of DNA functions as an antennae to allow DNA to sense subtle energies, and then acts as a transducer converting these subtle energy into conventional EM energy which is then radiated from the DNA in the form of photons.

Rein claims modern theories in quantum physics support the Toroid Antennae Model of DNA by suggesting the toroid acts as a transducer for some new form of energy (ie. subtle energy) which exists in higher dimensional spaces.

The Chakras as Vortices

The Multidimensional model holds that a human being consists of multiple layers, or dimensions, that coexist simultaneously. There seems to be general agreement about four main dimensions: the physical-etheric, emotional, mental, and spiritual. Versions of the multidimensional model have been discussed over the years at annual conferences of the International Society for the Study of Subtle Energies and Energy Medicine (ISSSEEM). According to tradition, these personal dimensions are powered by subtle energy centers called Chakras.

The concept of the chakra originates in Hindu texts and features in tantric and yogic traditions of Hinduism and Buddhism. Its name derives from the Sanskrit word for "wheel" or "turning" The chakras are believed to be a number of wheel-like vortices which, according to traditional Indian medicine, exist in the surface of the subtle body of living beings

<http://en.wikipedia.org/wiki/Chakra>

Since ancient times, "seers" have confirmed that the human aura appears as a series of nested spherical torus formations. Modern seers such as Barbara Ann Brennan (Hands of Light) have confirmed that each "chakra" is shaped like a two-ended trumpet; ie pseudosphere or catenoid both of which are related to the torus, and this is a visualization of where each spherical torus or energy body has its axis.

Through modern physiology we can see that the seven chakras of traditional Yogic practice correspond exactly to the seven main nerve ganglia, or glands, which emanate from the spinal column.

(see paper Validation of the Human Energy Field)

Interestingly, some researchers find that the torus and helix are prime elements of nature

[The Relativistic Torus and Helix as the Prime Elements of Nature Vladimir B Ginzburg Abstract:

The relativistic torus and helix are spiral string elements. Each of them contains a single-wave leading double string that is wound by a trailing double string propagating along its spiral path with the speed of light. In the torus, the leading double string follows a circular path, while the trailing double string follows a toroidal path. In the helix, both leading and trailing double strings follow helical paths. The torus and the helix have specific wave and particle properties that make them suitable to form the elementary particles and photons. These properties include a capability to absorb and release energy - a mechanism that sustains the elementary particles and photons.]

footnote

It has been demonstrated that photons are radiated from DNA.

Rattemeyer M, Popp FA, Nagl W. "Evidence of photon emission from DNA in living systems",

Naturwissen 68: 572-580, 1981.

The "vortex sponge" was devised by John Bernoulli in 1736 in an attempt to explain light in mechanical terms. This sponge consists of an ideal fluid interlaced by fine vortex

tubes oriented in all directions. When vortex tubes follow the fluid, the medium behaves like an elastic solid because of momentum transfer effects arising from the fine-grained vorticity. This character of the medium is altered by displacements which bend the tubes so that they move laterally. The motion of curved tubes relative to the fluid can result in macroscopic vorticity with accompanying rotation of the bulk medium. The mathematical expressions of these effects have the form of Maxwell's curl equations for free space.

American Journal of Physics, Volume 31, Issue 10, pp. 785-791 (1963).
<http://adsabs.harvard.edu/abs/1963AmJPh..31..785K>

The Torus and Consciousness

It has been suggested that the torus can be used to define the workings of consciousness itself. In other words...consciousness has a geometry! The geometric shape used to describe the self-reflexive nature of consciousness is the torus. The torus allows a vortex of energy to form which bends back along itself and re-enters itself.

The Torus, Vortex, and Higher Dimensional Physics Theory

A number of scientific theories, including Kaluza-Klein theory, Randall-Sundrum models, string theory and M-theory, hypothesize higher dimensions.

The claim has been made that in string physics, the torus is the "perfect" shape.

Returns for Google queries for "string physics torus" most often contain all three terms, so certainly the torus and string theory are associated, and therefore the torus and hypothetical higher dimensions are also associated.

There is not much google correlation for "string theory vortex" or "string theory vortices," so vortex and vortices are not strongly associated with string physics, torus, and higher dimensions.

There is no significant google association with john wheeler physicist and vortex or torus

The Torus in Advanced Mathematics

proof_fermat.doc\

Elliptic curves are very important; they are not elliptic; they are a cubic curve whose solutions looks like a donut torus? Every point on the donut is a solution to an equation.

(2 d or 3 d?)orus

Torus and Twistor Theory

The dual torus topology occupies a central role in the spinor, twistor and quaternionic formulation. This topology appears to be ubiquitous in astrophysical and cosmological phenomena

footnote

The Resonance Project

<http://www.theresonanceproject.org/research.html>

Torus and twistor are associated in most internet articles.

unified theories and alternatives

Frederick Krafft and the string theory of the atom
"String theory"
torus and string theory

Stringed vortices of "Anu"
fractal character of strings

"preons"
"Compton radius vortex"

¹ <http://en.wikipedia.org/wiki/Geometrodynamics> Wheeler stated:
*There is nothing in the World except empty curved space.
Matter, charge, electromagnetism, and other fields
are only manifestations of the curvature of space.*
<http://www.numericana.com/answer/curvature.htm>

² Physics and Geometry edited by David Jou i mirabent p. 139

³ The Effect whereby a moving electron can have its phase altered by the vector potential of the electromagnetic field of a nearby object, without actually encountering the object or its magnetic field.

⁴ see <http://en.wikipedia.org/wiki/Torus>

⁵ http://en.wikipedia.org/wiki/Knot_theory

⁶ http://en.wikipedia.org/wiki/Vortex_ring

⁷ For example: <http://xb0423.xb0.serverdomain.org/tardyon/mirror/gilbert/electro1.htm>

The "Roger Gilbert" letter: posted by "Dan Dunn"

"Roger Gilbert" is alleged to have proposed that atoms exist as left and right hand twisted heicoids, identical in concept to the "Anu" atom.

"Dan Dunn" notes that most text books describe an electromagnetic field as "an electrical and a magnetic wave propagating through space at right angles to each other.

" Now what does that mean? Try moving your hand up and down. That will represent the motion of the electrical wave. Now move it from side to side. That's the magnetic wave. Now do both at the same time by moving your hand in a circle. Now propagate that circle by walking along as you make the circle. The result is swirl, or helix. So, the fundamental shape of an electromagnetic field is a helix. The kind of vortex produced in a fluid

medium by a rotating helicoid is also helix-like, or helical. So the kind of vortex produced by a rotating helicoid resembles an electromagnetic field.”

However, this is an inaccurate description of a light wave. You would need two hands to simulate the behavior of an electromagnetic wave: one hand to move side to side; the other to move up and down, and they need to move “in phase”, so that when one hand is at a maximum, so is the other. This is NOT the same as a propeller generated vortex field.

⁸ *Adding a twist to radio technology*

<http://www.nature.com/news/2011/110222/full/news.2011.114.html>

Physicists have been able to create twisted (vortex) beams of visible light for about 20 years, having initially noticed that such beams were being produced inside some laser cavities. These twisted beams of light are useful in nanotechnology, as optical 'tweezers' or 'spanners' to manipulate tiny particles.

A European consortium has succeeded in twisting radio waves to transmit data over long distances. They developed a detection scheme to verify the waves were twisted, and showed how their detection scheme, carried out using radio telescopes, could identify the tell-tale twisted radiation from spinning black hole.

The bandwidth available to mobile phones, digital television and other communication technologies promises to be expanded enormously by exploiting this twistedness.

⁹ Olariu and Popescu, 1985. See <http://www.item-bioenergy.com/infocenter/ConsciousIntentiononDNA.pdf>

¹⁰ <http://www.montalk.net/notes/transverse-waves>

¹¹ <http://www.item-bioenergy.com/infocenter/ConsciousIntentiononDNA.pdf>

¹² http://en.wikipedia.org/wiki/Toroidal_inductors_and_transformers

¹³ http://en.wikipedia.org/wiki/History_of_knot_theory

¹⁴ <http://www.encyclopediaomadica.org/English/aether.php#Aether>

¹⁵ http://www.cellularuniverse.org/AA2MM_Aether.htm

¹⁶ [Ether returns in a bid to oust Dark matter : www.mkaku.org/forums/archive/index.php?t-83.html]

¹⁷ <http://www.montalk.net/notes/transverse-waves>

¹⁸ http://www.irprout.it/Documenti/superluminal_helical_model.pdf

Note [1] Bergman, D.L. and Wesley, J.P., “Spinning charged ring model of electron

yielding anomalous magnetic moment”, *Galilean Electrodynamics* **1**, 63-67, (Sept./Oct.1990)

¹⁹ http://www.irprout.it/Documenti/superluminal_helical_model.pdf

Note [2] Bergman, D.L., “Correspondence: Characteristics of the charged-ring electron”, *Galilean Electrodynamics*, **5**, 56-57 (1994)

²⁰ http://www.irprout.it/Documenti/superluminal_helical_model.pdf

Note [3] Siddharth, B.G., “Quantum mechanical black holes: towards a unification of quantum mechanics and general relativity”, arXiv:quant-ph/9808020, **1**, (12 August 1998) (<http://xxx.lanl.gov/pdf/quant-ph/9808020>)

²¹ <http://xxx.lanl.gov/pdf/quant-ph/9808020>

²² http://www.irprout.it/Documenti/superluminal_helical_model.pdf

Note [4] Wolff, M., “Matter waves and human consciousness”, *Noetic Journal*, **2**, n. 1, 67-75 (January 1999)

²³ <http://www.esotericscience.org/article5a.htm>

²⁴ Atoms are made of protons and neutrons (together called hadrons), along with lighter electrons. In turn, hadrons consist of particles called quarks, of which there are six varieties. In addition, there are six varieties of fundamental particles related to the electron, called leptons.

<http://www.nature.com/news/2007/071130/full/news.2007.292.html>

²⁵ Note:

<http://www.nature.com/news/2007/071130/full/news.2007.292.html>

²⁶ <http://www.valdostamuseum.org/hamsmith/worm4holes.html>

Note;

<http://xxx.lanl.gov/pdf/quant-ph/9808020.pdf>