Subtle Energy, Water, Effects of Light

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Prana	Hindu
Chi	Chinese
Od	Von Reichenbach
Orgone	Reich
Torsion	Kozyrev
Life Force	European
Subtle Energy	Tiller
Subtle Energy	Yuri Kronn

Evidence

- Prayer
- Dowsing
- Healing
- Remote Healing
- Remote Viewing
- ESP
- Water Properties
- Magnetic Effects in Non-paramagnetic materials
- Gravity
- Nuclear decay rates
- Biogeometry
- Telepathy

Claude Swanson, **Life Force: the Scientific Basis**, Poseidia Press, Tucson AZ, 2011.

In a given setting, Energy is the capability to produce a force
that does work causing a change.

- Subtle Energy cannot be a current paradigm energy force
  - Telepathy, does not generate enough energy
  - No known mechanism for its selectiveness?

Subtle Energy

- Subtle Energy is not an energy force
- Conscious intention is not an energy force
  - How can that which is not a force influence anything?
- Consciousness intention can structure (imprint) water and crystals
  - Creating subtle structure
- Consciousness is not local
- Subtle Energy is not necessarily local
- Subtle Energy raises the gauge[1]
- Subtle Energy belongs to the world of subatomic particles capable of influencing the structure of the combinations of these particles (quarks and or sub-quarks) inside the nucleus of atoms[2]

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[1] Tiller, 1997

[2] Yury Kronn and Joie Jones, *The Science of Subtle Energy*

Current Science Paradigm

- Everything is Physical
- There is nothing beyond material physicality
- Everything physical involves matter and energy interactions
- Theory involves mechanical explanation
    - Cause and Effect
    - Probablistic Cause and Effect
- Theory has been enormously successful
- Unstated Assumption
    - No human quality of consciousness, intention, emotion, mind or spirit can significantly influence a well- designed macro experiment in physical reality.

Outline

- Water and its Structure
    - Geometric Shapes
    - Coherent Domains
        - Caused by Potential Fields from Random Quantum Fluctuations
        - Potential Fields carry no energy
- Maxwell's equations: Force Fields and the Potential Fields
- The Aharonov-Bohm Effect
- Zimmerman: Transmitting the Vector Magnetic Potential Field
- The Frequencies of Water
- How can that which has no energy cause a change?

Outline

Water

- Liquid Water was originally thought to be a collection of randomly moving H_2O molecules
- It is now understood that Hydrogen Atom - Oxygen Atom bonds break and make
- One hydrogen atom leaves and another takes its place
- Once a hydrogen bond takes place, the breaking time is about 800fs[3]

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[3]Tobia Steinel et. al., Watching Hydrogen Bonds Break: A Transient Absorption Study of Water, J. Physical Chemistry A. Vol 108, No. 50 2004, pp. 10957-10964.

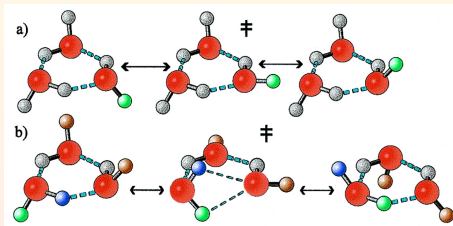https://www.allaboutcircuits.com/technical-articles/introduction-to-terahertz/
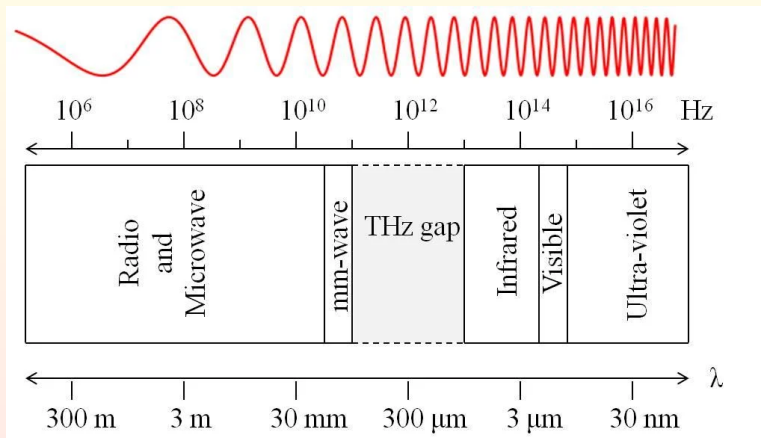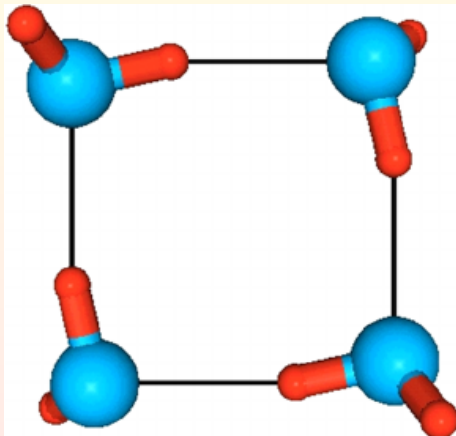
Water Geometric Structure

- The water molecules form a dynamic network consisting of connected tetrahedrons and pentamers
- The tetrahedrons and pentamers cluster together to form more complicated geometric clusters
- And for pure water there would be a void in the center
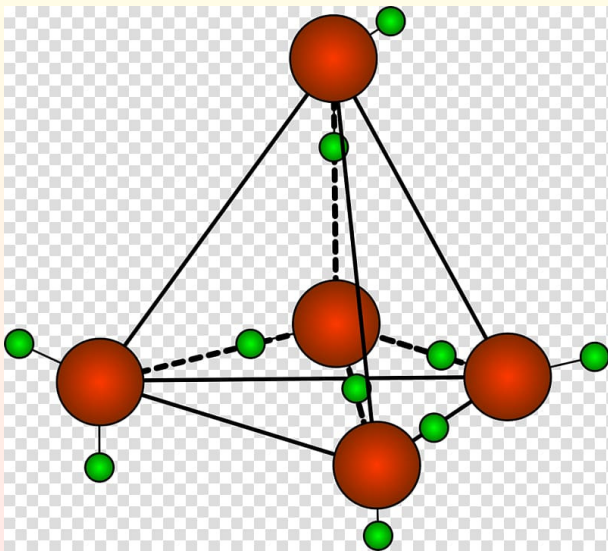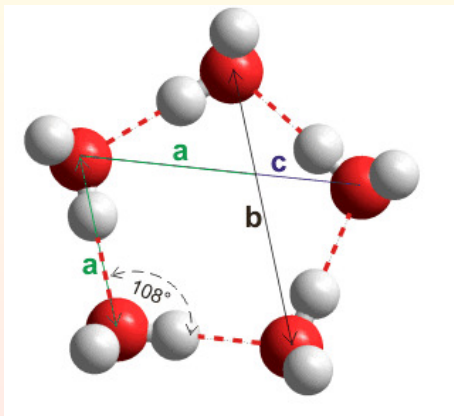- For mineralized water, there could be mineral ion in the center
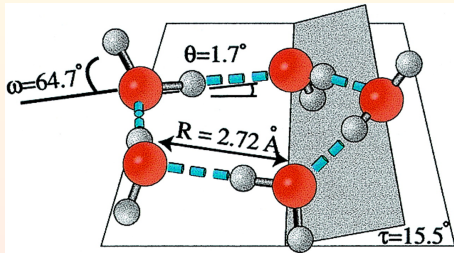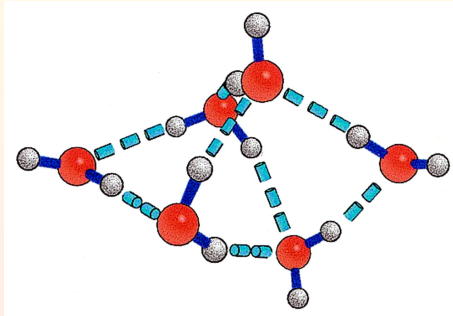
Formation of Water Octamer
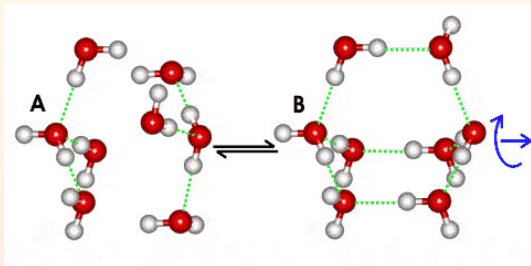
Homological Dodecahdral Clusters

- Five tetrahedrons can change their bondings and form a dodecahedron.
- There are over 30,000 different ways this can happen.
- Each way is an isomer.
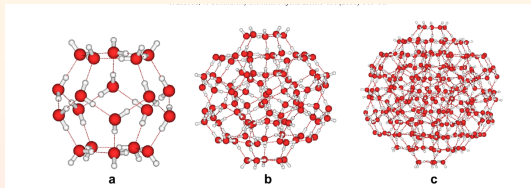
- (a)Dodecahedral $(H_2O)_{20}$
- (b)Homological Icosahedral $(H_20)_{200}$
- (c)Homological Icosahedral $(H_2O)_{280}$

Loboda and Goncharuk, 'Theoretical Study On Icosahedral Water Clusters', *Chemical Physics Letters* 484, 2010,144-147. (Play dodecahedron_with_5_tetrahedra.gif)

Cluster growth
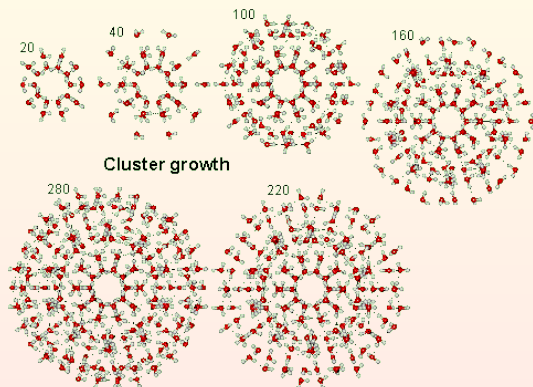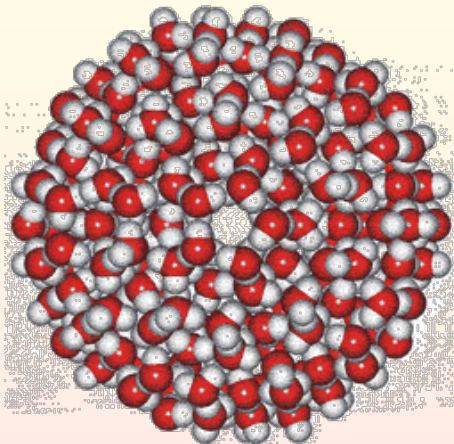
The homological icosahedral water cluster idea was introduced
by Martin Chaplin in 1999.
Martin Chaplin, '*Biophys. Chem.*', 83, 1999, 211.

Chaplin's Water Cluster Conclusions

'I have shown that there is a sufficient and broad evidential base for its [icosahedral water cluster] existence, including the ability to explain all the 'anomalous' properties of water. The icosahedral cluster model offers a structure, not possible with other models such as a random network model, on which large molecules can be mapped in order to investigate their interaction with water within a three-dimensional hydrogen-bonded network, and offers new insights into the ways biological and non-biological ions and macromolecules interact with each other in aqueous solution. It also offers explanations concerning some strange dilution effects and the way some organisms produce low-density water to protect against desiccation and high temperatures and pressures.'

Frequencies and Geometric Clusters

Geesink et. al. write

> *In pure water, fractal, geometrical clusters of H_2O molecules are formed, each with a discrete EMF-frequency. This basic energy landscape represents the ground vibratory state of all water containing materials.*

Geesink et. al., *Water the Cradle of Life via its Coherent Quantum Frequencies*, **Water**, 2020, pp. 78-108.

Vibrations

- In water, the bonding of the hydrogen atoms of water to the oxygen atom has six modes of vibrating. The main three are:

- Symmetric stretch: v_1
  - The two hydrogen atoms move together further and then closer to the oxygen atom:

- Asymmetric stretch: v_2
  - As one hydrogen atom moves closer to the oxygen atom the other mover further from the oxygen atom

- Bending Scissor Action: v_3
  - The angle between the two hydrogen atoms increases and decreases
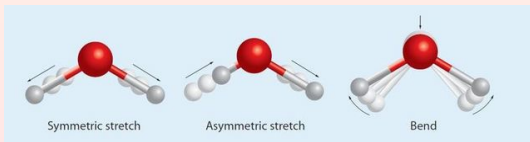
Symmetric stretch   Asymmetric stretch   Bend

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Interaction Between Water Molecules and EM Field

- Tackle this problem with Quantum Electrodynamics {QED}
- Molecules oscillate in unison between two single-particle states
- In tune with a non-vanishing EM field trapped in the ensemble of molecules
- Coherent Domain

Ivon Bono et. al. Emergence of the Coherent Structure of Liquid Water, **Water** Vol 4, 2012, pp. 510-532.

Zero Point Energy

- Zero-point Energy is the lowest possible energy that a Quantum Mechanical system may have
- Quantum Systems constantly fluctuate in the lowest energy state
- In accordance with the Heisenberg uncertainty principle
- Oscillations are both of wave field and electromagnetic field

Wikipedia Zero-point energy

The Ground State

- The random fluctuations of the quantum system constitute the ground state
- The small fluctuations (oscillations) are not independent uniformly distributed
- There could be a Markov dependence
- There may be a tendency for one frequency over time to dominate

The Excited State

Arani et. al. write

> *Above a certain density threshold, due to a fundamental instability, the small quantum fluctuations of the wave-field between the ground state and the singled out excited state will grow to a large value leading the quantum system matter plus EMF to a state where matter oscillates in phase with the modes of the EMF that are in resonance with the matter transition.*

Arani et. al., *QED Coherence and the Thermodynamics of Water*, **Int. J. Modern Physics B**, No. 15, Vol. 9, 1995, pp 1813-1841.

Coherent Ground State

- The zero point fluctuations produce a Perturbative Ground State
- And with the build up of a dominant frequency, the system migrates to the Coherent Ground State
- The system oscillates between the Perturbative Ground State and the Coherent Ground State
- In the Coherent Ground State, the electrons are all in unison
- And the electrons are acting as if they are free electrons
- The volume occupied by each molecule in the Coherent State is larger than the volume occupied by the molecules of the incoherent state

Phase, Magnetic Vector Potential, Electric Potential

Let,

- h Planck's constant
- e Electron charge
- $\vec{A}$ Magnetic Vector Potential
- $\vec{\Phi}$ Electric Potential
- ϕ Phase of the coherent incoherent oscillation (Scalar)

The equations state that the potential fields drive the phase of the coherent and incoherent oscillation.

$$\vec{A} = \frac{h}{2\pi e} \vec{\nabla} \phi$$

$$\Phi = -\frac{h}{2\pi e} \frac{d\phi}{dt}$$

Ivon Bono et. al. Emergence of the Coherent Structure of Liquid Water, **Water** Vol 4, 2012, pp. 510-532.

$$\frac{h}{2\pi e}\vec{\nabla}\phi(x,y,z,t) = \vec{A}(x,y,z,t)$$

$$-\frac{h}{2\pi e}\frac{d\phi(x,y,z,t)}{dt} = \Phi(x,y,z,t)$$

These equations are partial differential equations. The right hand sides are the forcing functions. The left hand sides are the result of being forced. The phase of the left hand side is what must be solved for.

The phase correlations within the ensemble of coherent molecules are kept not by the EM fields, but by their potentials, which propagate in space at the phase velocity, which, as is well-known, could be larger than c.

Ivon Bono et. al. Emergence of the Coherent Structure of Liquid Water, **Water** Vol 4, 2012, pp. 510-532.

Size of Coherent Domain

- Suppose the wavelength of oscillation is 100 nm
- Size of Coherent Domain is 100nm
- The ultraviolet band: 10nm to 400nm
- Water molecule has a size of .1 nm
- Coherent domain is 1000 times larger than water molecule!

- Water Molecules Oscillate between
    - The ground state, relatively small eV
    - And an excited state 12.06 eV
- The ionization potential of water is 12.56 eV
    - $H_2O \rightarrow 2H^{++}2e^- + O$
- If the coherent domain water molecules oscillated at an energy about .5 eV volts more
    - Water would Split
    - Making H^+ available to burn in the body

- Alberty Szent-Györgyi suggested that water at interfaces is the key to life
- Water at membrane interfaces is in an excited state
- Requires less energy to split than water in a ground state
- Sign of excited water is that a voltage should appear at the boundary between interfacial water and bulk water
- Most water in living organisms is interfacial water
- Water at the interface is a coherent domain
- Water at the interface is negatively charged
- Water below the coherent domain is positively charged

Gerald Pollack and EZ Water

- Examined water near the surface of a hydrophilic polymer sheet
- Discovered that water near the surface was different
- Near the Surface
    - Negative Charges
    - Higher Viscosity
    - Higher Refractive Index
    - Absorption Peak at 270nm
    - Exclusion Zone
- Positive Charges away from the surface
- Water near the surface is made up of Coherent Domains

Emilio Del Giudice

> *"I am totally at odds with the paradigm of conventional science that looks on matter as an inert entity pushed around by external forces. The paradigm of quantum field physics does not separate matter from movement as matter is intrinsically fluctuating. There is a possibility of tuning together the quantum fluctuation of a large number of bodies and creating coherence in matter through music. Human organisms could be part of such coherence. Artistic experiences are resonances in the framework of our quantum field paradigm. Their relevance for the self organization of matter has been recognized by artists and humans long before the scientists. Conventional science is very far from the dreams, needs and wishes of people. It has no place for the spontaneous movement of organisms or the love between organisms. Our task today is to show that the modern quantum field paradigm is able to raise physical truth to the same level as poetic truth."*

Emilio Del Giudice, Colors of Water, Art, Science, Music Festival, March 2013

- Electric Potential Φ
- Magnetic Vector Potential $\vec{A}$
- Carry no energy
- If they carry no energy, how can they affect anything?

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Maxwell: Vector Magnetic Potential

Article 405 of Maxwell's Treatise (1873) is entitled *The Vector Potential of Magnetic Induction"*. This indicated that it occupied an important place in Maxwell's thinking.

Bork gives a detailed history of Maxwell and the vector potential.

Nevertheless, Hertz and Heaviside did not include the Vector Magnetic Potential in their writings of the fundamental equations. They regarded the magnetic vector potential as secondary.

Vector Magnetic Potential

A bit more than 20 years after the publication of Maxwell's Treatise, Andrew Gray's 1898 Treatise on Magnetism and Electricity, stated on page 73

> *The use of the vector potential is sometimes convenient as an analytical expedient. But it is not a physical quantity which can be observed experimentally, and its use is sometimes attended with difficulty owing to the introduction of certain arbitrary functions which there is some trouble interpreting.*

Because of these reasons, the electric potential $\vec{\Phi}$ and the magnetic vector potential $\vec{A}$ historically have been regarded as a mathematical convenience since they enable some problems to be solved easier using them. But, it was held that the potentials have no physical existence and are not measurable.

Maxwell's Equations

Expressed in the vector calculus of Heaviside, these equations match one for one in Maxwell's treatise.

$$\vec{\nabla} \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$$

$$\vec{\nabla} \cdot \vec{E} = \frac{\rho}{\epsilon}$$

$$\vec{\nabla} \times \vec{B} = \mu \left(\vec{J} + \epsilon \frac{\partial \vec{E}}{\partial t} \right)$$

$$\vec{\nabla} \cdot \vec{B} = 0$$

$$\vec{\nabla}^2 \vec{E} - \frac{1}{c^2} \frac{\partial^2 \vec{E}}{\partial t^2} = \mu \left(\frac{\partial \vec{J}}{\partial t} + \frac{1}{\mu \epsilon} \vec{\nabla} \rho \right)$$

$$\vec{\nabla}^2 \vec{B} - \frac{1}{c^2} \frac{\partial^2 \vec{B}}{\partial t^2} = -\mu (\vec{\nabla} \times \vec{J})$$

$$\vec{B} = \vec{\nabla} \times \vec{A}$$

$$\vec{E} = -\vec{\nabla}\Phi - \frac{\partial \vec{A}}{\partial t}$$

If Λ is a continuously differentiable function that vanishes at infinity, and $\vec{\Phi}$ and $\vec{A}$ are changed by

$$\Phi' = \Phi - \frac{\partial \Lambda}{\partial t}$$

$$\vec{A}' = \vec{A} + \vec{\nabla}\Lambda$$

the force fields $\vec{E}$ and $\vec{B}$ do not change.

Given any $\vec{E}$ and $\vec{B}$ fields, there are multiple potential fields that can cause them.

Wave Equation for Potentials

$$\frac{1}{c^2}\frac{\partial^2 \Phi}{\partial t^2} - \nabla^2 \Phi - \frac{\partial}{\partial t}\left(\vec{\nabla} \cdot \vec{A} + \frac{1}{c^2}\frac{\partial \Phi}{\partial t}\right) = \frac{\rho}{\epsilon}$$

$$\frac{1}{c^2}\frac{\partial^2 \vec{A}}{\partial t^2} - \vec{\nabla}^2 \vec{A} + \vec{\nabla}\left(\vec{\nabla} \cdot \vec{A} + \frac{1}{c^2}\frac{\partial \Phi}{\partial t}\right) = \mu \vec{J}$$

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The Aharonov Bohm Effect

The Aharonov-Bohm effect (1959), occurs when a charged particle passes through a magnetic vector potential field, where the magnetic field and the electric field are zero, and as a result changes phase, which is measureable.

- Yakir Aharaonov, the PhD student
- David Bohm, the professor
- Published a paper in 1959 arguing that
- Contrary to the conclusions of classical mechanics,
- There exist effects of potentials on charged particles, even in the region where all the fields, and therefore the forces on the particles vanish.

Aharonov and Bohm, Significance of Electromagnetic Potentials in the Quantum Theory, **Physical Review**, Volume 115, 1959, pp 485-491.

- The theoretical paper caused an uproar in physics
- The potential fields were only a useful mathematical tool
- They had no reality
- Robert Chambers in 1960, did one of the experiments suggested by the Aharonov and Bohm and indeed found an effect
- That experiment for the next ten years was examined with all kinds of suggestions of how there was a leak of the force fields to cause the effect
- It was not until the 1982 with the increasing refinements of the experiment that nobody was able to offer a suggestion as to how there might be a leakage and the effect was accepted

Aharonov and Bohm, Significance of Electromagnetic Potentials in the Quantum Theory, **Physical Review**, Volume 115, 1959, pp 485-491.

Researchgate
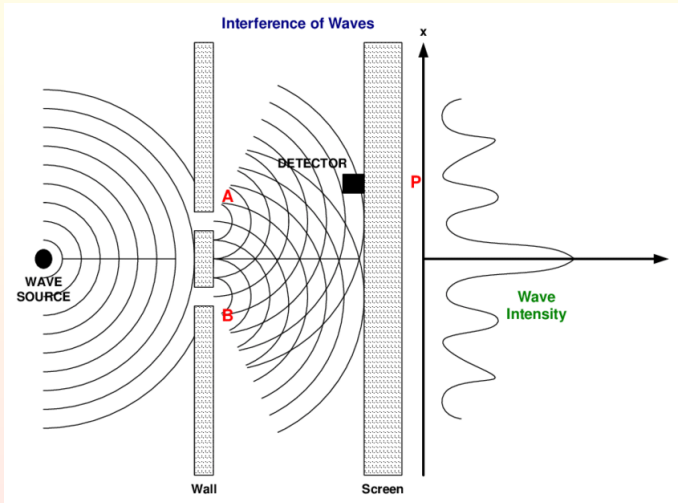
The Aharonov-Bohm Suggested Experiment

Top View
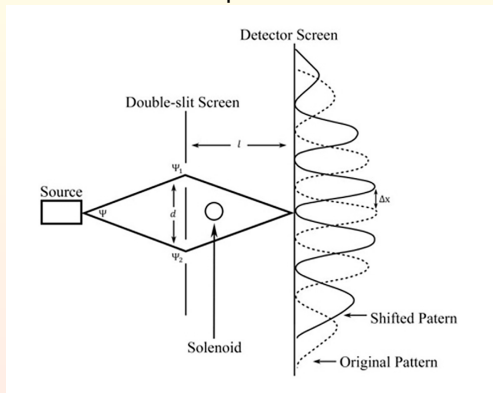
If there were no effect, the appearance would be the interference shown in the dotted curve. The Aharonov-Bohm experiment produced the shifted interference pattern.

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Nikolova and Zimmerman, 2007-2013

1. Natalia Nikolova and Robert Zimmerman, *Detection of the Time-dependent Electromagnetic Potential at 1.3 GHz*, Department of Electrical and Computer Engineering, McMaster University Report CEM-R-46, November 2007.

2. Robert Zimmerman, *Transmission and Reception of Longitudinally Polarized Momentum Waves*, QEX, July/August 2011, pp 31-35.

3. Robert Zimmerman, *Macroscopic Aharonov-Bohm Effect at L-Band Microwave Frequencies*, Modern Physics Letters B, Vol. 25, No. 9, 2011, pp. 649-662.

4. Natalia Nikolova and Robert Zimmerman, US Patent 8,165,531, April 24, 2012.

5. Robert Zimmerman, *Reception of Longitudinal Vector Potential Radiation With A Plasma Antenna*, Journal of Applied Physics, Volume 114, 2013, pp. 044907 1-6.
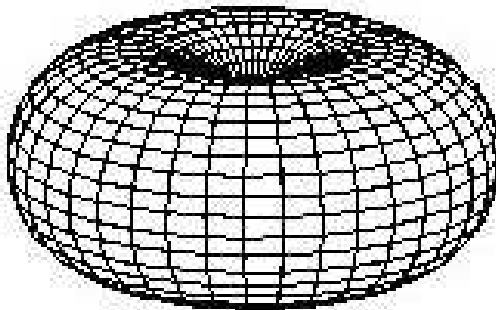
Vertical Folded Dipole To Transmit A Longitudinal *A* field
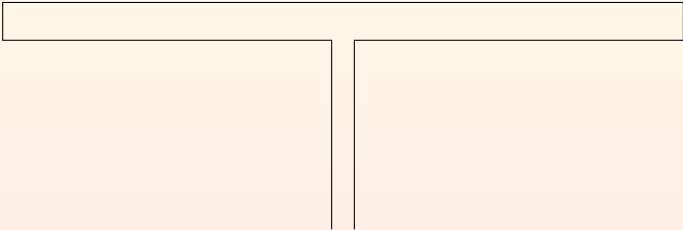
Nikolova and Zimmerman, 2007
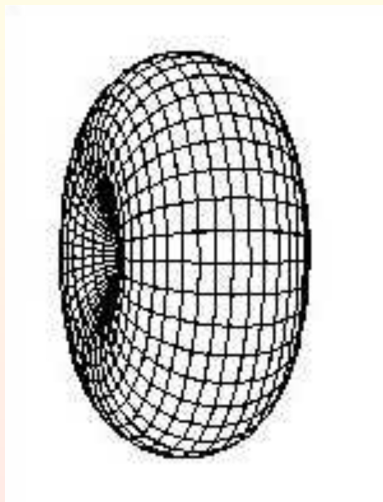

A vertically oriented folded dipole
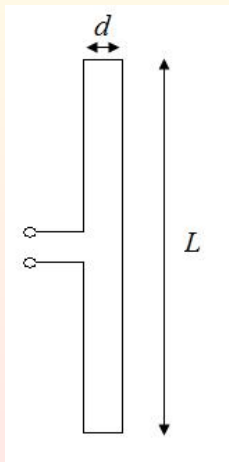
The electromagnetic field strength depiction of a vertically oriented folded dipole radiation. Notice that the field strength directly above and below the vertical axis of the folded dipole is at a minimum.

The electromagnetic field strength pattern for a horizontally
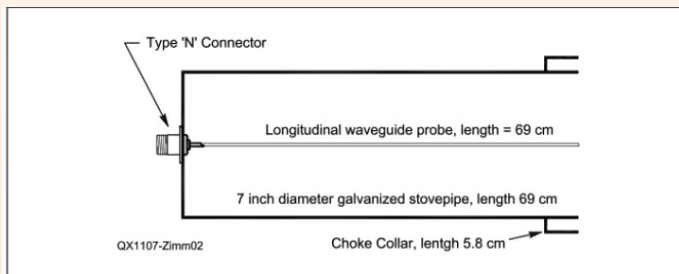oriented folded dipole mounted very high above the earth

- Constructed a 1.3 GHz wireless link
- The folded dipole was placed in the horizontal plane
- The radiated vector magnetic field was oriented along the axis of the folded dipole
- The direction of propagation is in the direction of the axis of the folded dipole
- The magnetic vector potential component is longitudinally polarized with respect to the direction of propagation
- The radiated electric and magnetic fields were zero

Natalia Nikolova and Robert Zimmerman, *Detection of the Time-dependent Electromagnetic Potential at 1.3 GHz*, Department of Electrical and Computer Engineering, McMaster University Report CEM-R-46, November 2007.

- The electric intensity field $\vec{E}$ is near zero at tip or short end of the folded dipole
- The magnetic flux density field $\vec{B}$ is near zero at tip or short end of the folded dipole
- The $\vec{E}$ field and $\vec{B}$ field are zero and continue zero indefinitely in the direction of the axis of the folded dipole
- The longitudinal magnetic vector potential is radiated from the tip or short end of the folded dipole

Zimmerman, 2011

- Monopole antenna is 69cm long
- Wavelength of 1.3GHz is about 23 cm
- A 7 inch circular waveguide operating in the transverse magnetic TM_{01} mode
- Waveguide prevents the transmission of transverse waves
- Quarter Wavelength choke collar prevents currents on the inside from folding around the open end and radiating
- Longitudinal 1.3GHz magnetic vector potential carrier

Type 'N' Connector

Longitudinal waveguide probe, length = 69 cm

7 inch diameter galvanized stovepipe, length 69 cm

QX1107-Zimm02　　　　Choke Collar, length 5.8 cm

Robert Zimmerman, *Transmission and Reception of Longitudinally Polarized Momentum Waves*, QEX, July/August

Plasma Monopole Antenna Detector

- The Aharonov-Bohm Effect
- The magnetic vector potential can be detected and measured
- Using a biased low-temperature plasma antenna
- Formed from
    - U-shaped fluorescent light tube
    - Small neon tube
- The longitudinal potential wave is received along the axis of the monopole
- The receiver side RF signal is the result of the modulation of the local bias power caused by the Aharanov-Bohm effect
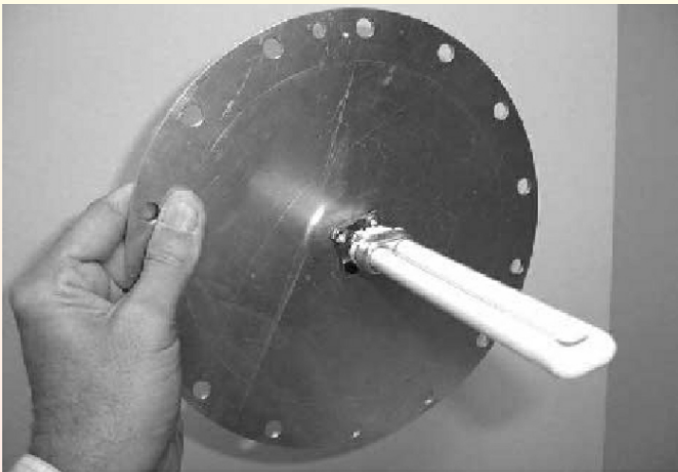
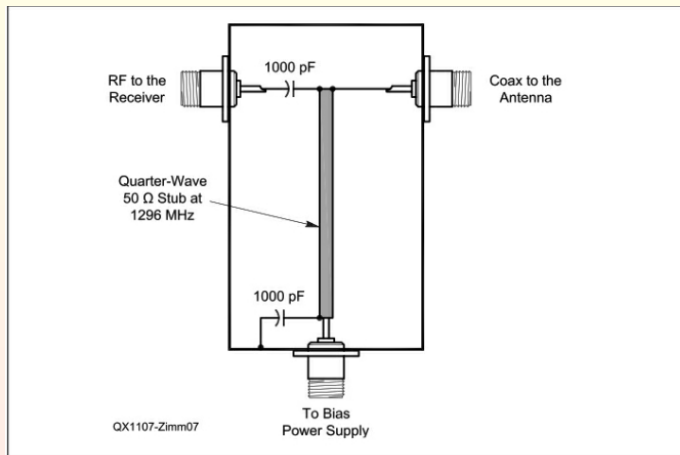Robert Zimmerman, *Transmission and Reception of Longitudinally Polarized Momentum Waves*, QEX, July/August

2011.

Low-loss
Coaxial
Cable

Bias T

1296 MHz
Receiver

Ignition Supply
(In Series)

High-Voltage
Current-Regulated
Floating Supply

QX1107-Zimm06

Robert Zimmerman, *Transmission and Reception of Longitudinally Polarized Momentum Waves*, QEX, July/August
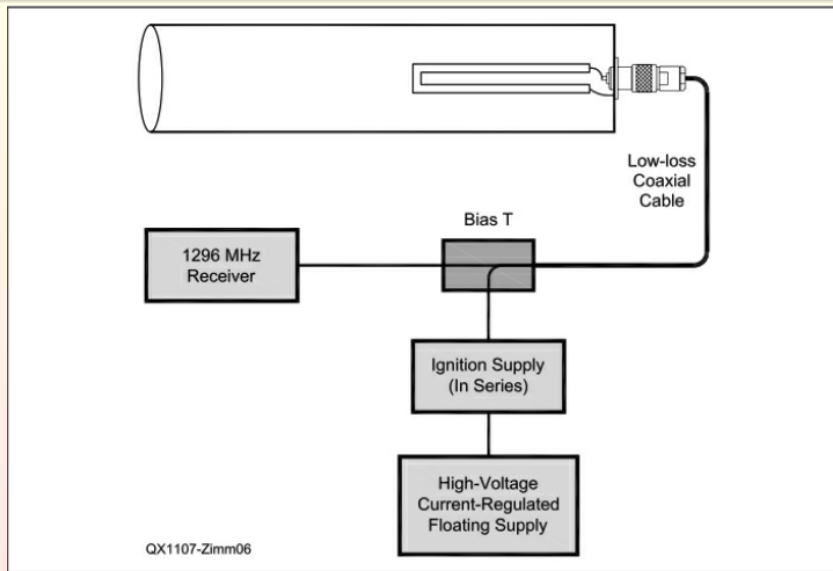
Bias T Schematic

Robert Zimmerman, *Transmission and Reception of Longitudinally Polarized Momentum Waves*, QEX, July/August

2011.

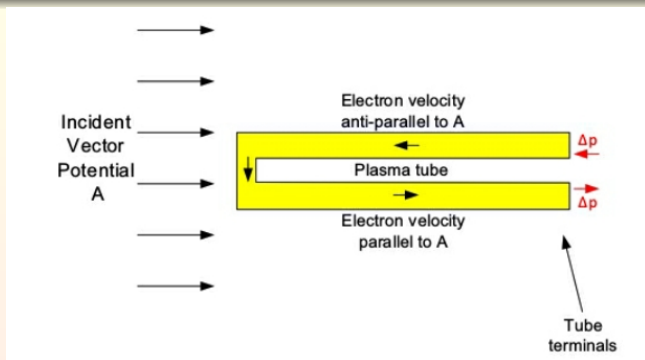Shows a schematic of the Bias T used to feed the bias current
to the waveguide antenna

Robert Zimmerman, *Transmission and Reception of Longitudinally Polarized Momentum Waves*, QEX, July/August 2011.

Shows the conical horn attached to the receiving waveguide

The magnetic vector potential *A* approaches from the left. The electron flux in the upper leg of the tube is anti-parallel with magnetic vector potential and undergoes a decrease of momentum of Δp. The electron flux in the lower leg of the tube is parallel with magnetic vector potential and undergoes an increase of momentum of Δp.

Robert Zimmerman, *Transmission and Reception of Longitudinally Polarized Momentum Waves*, QEX, July/August 2011.

Shows the transmitting station which is setup for the 1500 meter link. Sherry Goeller is operating it.
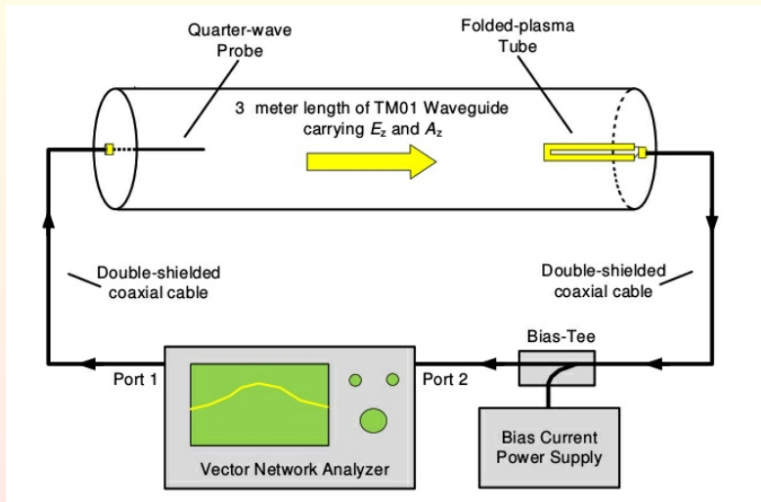
Robert Zimmerman, *Transmission and Reception of Longitudinally Polarized Momentum Waves*, QEX, July/August 2011.

Shows the receiving station which is setup for the 1500 meter link. Robert Zimmerman is operating it

Robert Zimmerman, *Macroscopic Aharonov-Bohm Effect at L-Band Microwave Frequencies*, Modern Physics Letters B, Vol. 25, No. 9, 2011, pp. 649-662

Bias Current

- Bias Current is 200ma
- Power source is floating with DPDT switch to reverse polarity
- Coaxial center conductor connected to one leg of plasma antenna
- Shield of coaxial cable connected to grounded leg of plasma antenna
- Tube current is negative when coaxial center conductor is negative with respect to ground
- Reversing current results in a 180° phase shift of the detected A_z
- Reversing current results in no phase change of the detected E_z

Technical Conclusions from Vector Network Analyzer

- A folded plasma tube can receive E_z as a simple folded monopole antenna
- A folded plasma tube can detect A_z as a differential Aharonov-Bohm detector
- A_z and E_z can be calculated from amplitude/phase data collected with a vector network analyzer
- Detection of vector magnetic potential depends on having high velocity electron response to A_z
    - RF component of electron velocity due to A_z is $\approx 20 m/s$ in the fluorescent tub plasma
    - RF component of electron velocity due to A_z is $\approx 3 mm/s$ in copper
- In far field, E_z drops off as $1/R^2$
- In far field A_z drops off as $1/R$

- Longitudinal Vector Magnetic Waves can be transmitted and detected
- Carry no power
- Detected signal power comes from the bias supply
- Without Transmitting Transverse Electromagnetic waves

Summary

- The force fields $\vec{E}$ and $\vec{B}$ can be derived from the corresponding potential fields Φ and $\vec{A}$
- The potential fields carry no energy
- The potential fields interact with the quantum fluctuations
    - Coherent Domains
    - Aharonov-Bohm effect
    - Longitudinal Wave Generation
- The energy is coming from the quantum fluctuations, zero-point energy
- The initiating magnetic potential wave $\vec{A}$, interacts with quantum fluctuations
- The quantum fluctuations reinforce the vector magnetic potential wave $\vec{A}$
- Which continues on undiminished

- Water and its Structure
    - Geometric Shapes
    - Coherent Domains
        - Caused by Potential Fields from Random Quantum Fluctuations
        - Potential Fields carry no energy
- Maxwell's equations: Force Fields and the Potential Fields
- The Aharonov-Bohm Effect
- Zimmerman: Transmitting the Vector Magnetic Potential Field
- The Frequencies of Water
- Experiments
- How can that which has no energy cause a change?

Water: Cradle of Life

Geesink et. al. analyzed 500 biomedical studies published from 1950 though 2017 dealing with EM oscillations in tissues, cells, and biomolecules. They did a meta-analysis of 700 measured frequencies. Water with various solutes were present. The solutes change the weight per mole and the weight per mole is related to the resonant frequency.

The resonant frequencies were organized as a 12 tone Pythagorean chromatic scale over 48 octaves, from 1Hz to THz. These are coherent electromagnetic field bands to that of fluid assemblies in living cells.

Geesink et. al., *Water the Cradle of Life via its Coherent Quantum Frequencies*, **Water**, 2020, pp. 78-108.

Water: Cradle of Life

1. Intrinsic frequencies of water molecules measured across the electromagnetic spectrum using various spectroscopic technologies show that semi-harmonic frequency patterns found in purified water are similar to those found in biological systems.

Geesink et. al, *Water the Cradle of Live via its Coherent Quantum Frequencies*, **Water**, 2020, pp. 78-108.

2. The water molecule assembly shows electromagnetic and electronic collective states that contain *quantum imprints or molds* for living cells.

3. Since water molecules have a comparable distribution of coherent electromagnetic field bands to that of fluid assemblies in living cells, a resonant wave interaction is expected between the cytoplasm and surrounding water molecules.

Geesink et. al, *Water the Cradle of Live via its Coherent Quantum Frequencies*, **Water**, 2020, pp. 78-108.

4. The resonant frequencies follow the Pythagorean tuning.

Geesink et. al., *Water the Cradle of Life via its Coherent Quantum Frequencies*, **Water**, 2020, pp. 78-108.
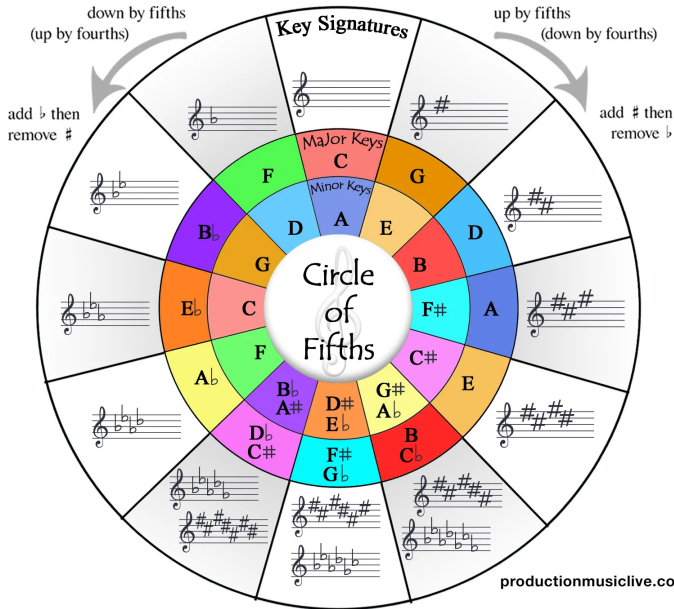
Pythagorean Tuning Going Up the Circle of Fifths

Augmented 4th	$F^\sharp$	$(\frac{3}{2})^6$	$\frac{729}{64}$	$\frac{1}{8}$	$\frac{729}{512}$	1.4238
Major 7th	B	$(\frac{3}{2})^5$	$\frac{243}{32}$	$\frac{1}{4}$	$\frac{243}{128}$	1.8984
Major 3rd	E	$(\frac{3}{2})^4$	$\frac{81}{16}$	$\frac{1}{4}$	$\frac{81}{64}$	1.2656
Major 6th	A	$(\frac{3}{2})^3$	$\frac{27}{8}$	$\frac{1}{2}$	$\frac{27}{16}$	1.6875
Major 2nd	D	$(\frac{3}{2})^2$	$\frac{9}{4}$	$\frac{1}{2}$	$\frac{9}{8}$	1.1250
Perfect 5th	G	$(\frac{3}{2})^1$	$\frac{3}{2}$	1	$\frac{3}{2}$	1.5000
Unison	C	1	1	1	1	1.0000

Unison	C	1	1	1	1	1.0000
Perfect 4th	F	$(\frac{2}{3})^1$	$\frac{2}{3}$	2	$\frac{4}{3}$	1.3333
Minor 7th	$B^\flat$	$(\frac{2}{3})^2$	$\frac{4}{9}$	4	$\frac{16}{9}$	1.7778
Minor 3rd	$E^\flat$	$(\frac{2}{3})^3$	$\frac{8}{27}$	4	$\frac{32}{27}$	1.1852
Minor 6th	$A^\flat$	$(\frac{2}{3})^4$	$\frac{16}{81}$	8	$\frac{128}{81}$	1.5802
Minor 2nd	$D^\flat$	$(\frac{2}{3})^5$	$\frac{32}{243}$	8	$\frac{256}{243}$	1.0535

Pythagorean Chromatic Scale

Unison	C	1	1	1	1	1.0000
Minor 2nd	$D^\flat$	$(\frac{2}{3})^5$	$\frac{32}{243}$	8	$\frac{256}{243}$	1.0535
Major 2nd	D	$(\frac{3}{2})^2$	$\frac{9}{4}$	$\frac{1}{2}$	$\frac{9}{8}$	1.1250
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Major 7th	B	$(\frac{3}{2})^5$	$\frac{243}{32}$	$\frac{1}{4}$	$\frac{243}{128}$	1.8984

Factor	$F_{1,m}$	$F_{2,m}$	$F_{3,m}$	$F_{4,m}$	$F_{5,m}$	$F_{6,m}$	$F_{7,m}$	$F_{8,m}$	$F_{9,m}$	$F_{10,m}$	$F_{11,m}$	$F_{12,m}$
m=0	1.0000	1.0535	1.1250	1.1852	1.2656	1.3333	1.4142	1.5000	1.5803	1.6875	1.7778	1.8984 Hz
m=1	2.0000	2.1070	2.2500	2.3704	2.5312	2.6666	2.8284	3.0000	3.1606	3.3750	3.5556	3.7968 Hz
m=2	4.0000	4.2140	4.5000	4.7408	5.0624	5.3332	5.6568	6.0000	6.3212	6.7500	7.1112	7.5936 Hz
m=5	32.000	33.712	36.000	37.9264	40.4992	42.6656	45.2544	48.000	50.5696	54.000	56.8896	60.7488 Hz
m=8	256.00	269.70	288.00	303.41	324.00	341.33	362.04	384.00	404.54	432.00	455.12	486.00 Hz
m=12	4.0960	4.3151	4.6080	4.8546	5.1839	5.4613	5.7926	6.1440	6.4729	6.9120	7.2819	7.7759 KHz
m=2^{24}	16.777	17.675	18.874	19.884	21.233	22.370	23.726	25.166	26.513	28.312	29.827	31.850 MHz
m=2^{32}	4.2950	4.5248	4.8318	5.0904	5.4357	5.7266	6.0739	6.4425	6.7873	7.2478	7.6356	8.1536 GHz
m=2^{40}	1.0995	1.1583	1.2370	1.3031	.3915	1.4660	1.5549	1.6493	1.7376	1.8554	1.9547	2.0873 THz
m=2^{48}	281.47	296.53	316.66	333.60	356.23	375.29	398.06	422.21	444.81	474.99	500.41	534.35 THz

532.5	505.6	473.4	449.3	420.8	399.5	376.6	710.1	674.0	631.3	599.1	561.0 nm

Marc Henry relates the molecular weight *M* of any solvent or solute species to a frequency *f* using the mass-energy equivalence coupled to Planck-Einstein relations. He finds that water characterized by $M = 18 g/mol$ leads to a characteristic frequency $f = 54$ HZ.

4-8 Hz:
4.0, 4.22, 4.5, 4.74, 5.06, 5.33, 5.70, 6.0, 6.32, 6.75, 7.11, 7.59 Hz

32-61 Hz:
32.0, 33.7, 36.0, 37.9, 40.5, 42.7, 45.6, 48.0, 50.6, 54.0, 56.9, 60.75 Hz

64-122 Hz:
64, 67.5, 72, 75.78, 81, 85.3, 91.18, 96, 101.1, 108.0, 113.8, 121.5 Hz

255-487 Hz:
256, 269.8, 288, 303.1, 324, 341.2, 364.7, 384, 404.5, 432, 455.1, 486 Hz

16.3-31.2 kHz:
16.38, 17.25, 18.43, 19.40, 20.74, 21.84, 23.34, 24.58, 25.91, 27.65, 29.13, 31.10 KHz

16.7-32 MHz:
16.77, 17.66, 18.87, 19.86, 21.24, 22.36, 23.90, 25.17, 26.53, 28.31, 29.83, 31.85 Mhz

4.2-8.2 GHz:
4.293, 4.520, 4.831, 5.085, 5.437, 5.724, 6.119, 6.443, 6.792, 7.247, 7.636, 8.154 GHz.

1.1-1070 THz:
1.10, 1.158, 1.237, 1.302, 1.391, 1.466, 1.566, 1.649, 1.738, 1.855, 1.955, 2.088 Thz
2.20, 2.316, 2.474, 2.604, 2.783, 2.931, 3.133, 3.298, 3.475, 3.710, 3.909, 4.175 THz
4.40, 4.633, 4.948, 5.208, 5.566, 5.863, 6.266, 6.597, 6.950, 7.420, 7.819, 8.350 Thz
8.80, 9.266, 9.897, 10.42, 11.13, 11.73, 12.53, 13.19, 13.90, 14.84, 15.64, 16.70 THz
17.59, 18.53, 19.79, 20.83, 22.26, 23.45, 25.06, 26.39, 27.80, 29.68, 31.28, 33.40 THz
35.19, 37.06, 39.59, 41.66, 44.53, 46.90, 50.13, 52.78, 55.60, 59.36, 62.55, 66.80 THz
70.38, 74.13, 79.18, 83.33, 89.05, 93.80, 100.3, 105.6, 111.2, 118.7, 125.1, 133.6 THz
140.8, 148.3, 158.4, 166.7, 178.1, 187.6, 200.5, 211.1, 222.4, 237.5, 250.2, 267.2 THz
281.5, 296.5, 316.7, 333.3, 356.2, 375.2, 401.0, 422.2, 444.8, 474.9, 500.4, 534.4 THz.
562.9, 592.9, 632.7, 666.5, 712.4, 750.4, 802.0, 844.4, 889.6, 949.8, 1000.8, 1068.8 THz
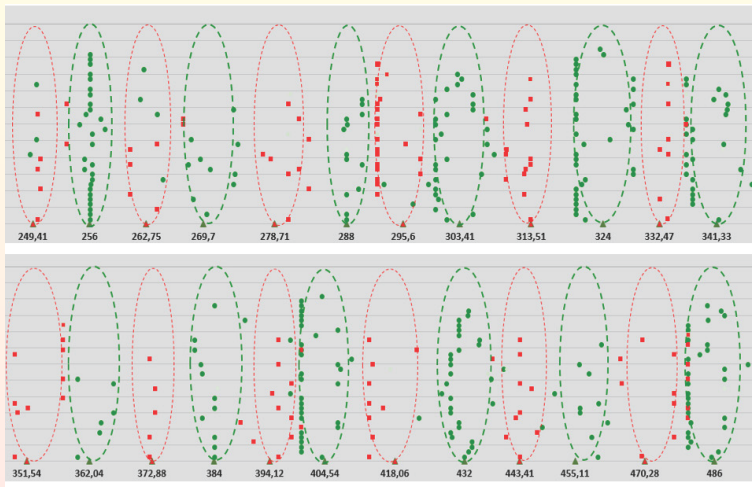
Shown from factor $m = 8$ Octaves

Conclusions

The frequencies involving ratios of 2:3 and 3:2 and their powers placed in higher octaves shows that

a close relation between the frequencies of the surveyed water spectra. Pure water absorption spectra show precisely the same frequency pattern as found for the living cells and biomolecules with the investigated range of UV to GHz.

Ivon Bono et. al. Emergence of the Coherent Structure of Liquid Water, **Water** Vol 4, 2012, pp. 510-532.

Surface Tension

- The ease with which something may enter a liquid
- The hydrogen bonding between water molecules increases the tension in water
- Water's surface tension is about 72 mN/m (room temperature)
- Water's surface adjacent to air is negatively charged
- Just a few molecular diameters below the surface, water is positively charged

Interfacial Water

- Alberty Szent-Györgyi suggested that water at interfaces is the key to life
- Water at membrane interfaces is in an excited state
- Requires less energy to split than water in a ground state
- Sign of excited water is that a voltage should appear at the boundary between interfacial water and bulk water
- Most water in living organisms is interfacial water
- Water at the interface is a coherent domain
- Water at the interface is negatively charged
- Water just beyond the coherent domain is positively charged
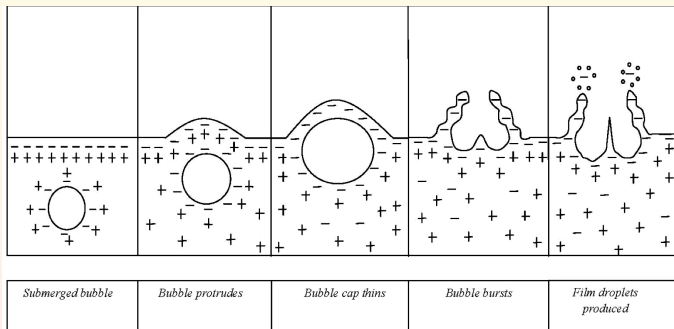
Bhatacharyya et. al., Charge Separation From Bursting of Bubbles on Water,
J. Physical Chemistry A, Vol 115, 2011, pp. 5723-5728.

The theory of Emilio Del Giudice suggests that the interaction

- Between the vacuum electromagnetic field and water
- Induces the formation of large stable coherent domains (Cavities)
- Having diameters on the order of 100 nm
- Involving millions of water molecules
- And trapping the energy of the imaginary mass photons
- Unable to escape the cavity

Emilio Del Giudice, 'Old and New Views on the Structure of Matter and the special Case of Living Matter', *Journal of Physics: conference series*, Vol 67, 2007, 012006.n
Emilio Del Giudice, PR. Spinette, and A. Tedeschi, ' Water dynamics at the root of metamorphosis in Living Organisms', *Water*, Vol 2 2010, 566-86. G. Preparata, *QED Coherence in Matter*, World Scientific, Singapore, 1995.

Coherent Domain Oscillations

- Water Molecules Oscillate between
    - The ground state, relatively small eV
    - And an excited state 12.06 eV
- The ionization potential of water is 12.56 eV
    - $H_2O \rightarrow 2H^{++}2e^- + O$
- If the coherent domain water molecules oscillated at an energy about .5 eV volts more
    - Water would Split
    - Making H^+ available to burn in the body

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- Water at the interface is negatively charged
- Water just beyond the coherent domain is positively charged

Gerald Pollack and EZ Water

- Examined water near the surface of a hydrophilic polymer sheet
- Discovered that water near the surface was different
- Near the Surface
  - Negative Charges
  - Higher Viscosity
  - Higher Refractive Index
  - Absorption Peak at 270nm
  - Exclusion Zone
- Positive Charges away from the surface
- Water near the surface contains Coherent Domains

Emilio Del Giudice

"I am totally at odds with the paradigm of conventional science that looks on matter as an inert entity pushed around by external forces. The paradigm of quantum field physics does not separate matter from movement as matter is intrinsically fluctuating. There is a possibility of tuning together the quantum fluctuation of a large number of bodies and creating coherence in matter through music. Human organisms could be part of such coherence. Artistic experiences are resonances in the framework of our quantum field paradigm. Their relevance for the self organization of matter has been recognized by artists and humans long before the scientists. Conventional science is very far from the dreams, needs and wishes of people. It has no place for the spontaneous movement of organisms or the love between organisms. Our task today is to show that the modern quantum field paradigm is able to raise physical truth to the same level as poetic truth."
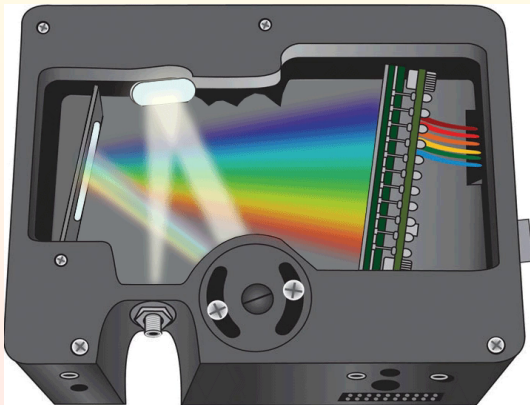
Emilio Del Giudice, Colors of Water, Art, Science, Music Festival, March 2013

Outline

- Water and its Structure
    - Geometric Shapes
    - Coherent Domains
        - Caused by Potential Fields from Random Quantum Fluctuations
        - Potential Fields carry no energy
- Maxwell's equations: Force Fields and the Potential Fields
- The Aharonov-Bohm Effect
- Zimmerman: Transmitting the Vector Magnetic Potential Field
- The Frequencies of Water
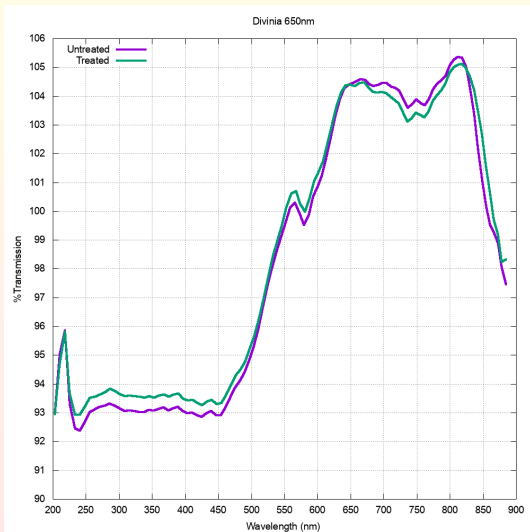- Experiments
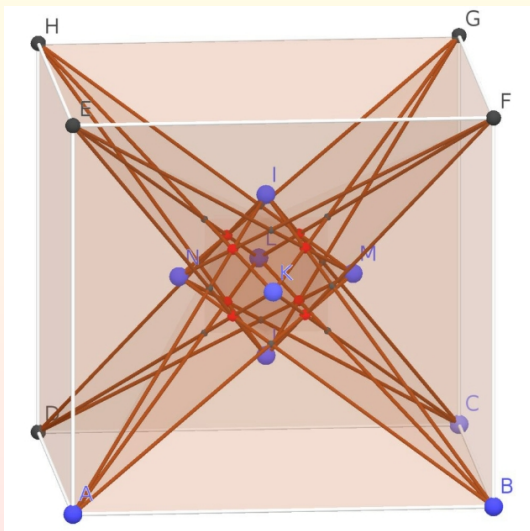- How can that which has no energy cause a change?

Divinia 650nm

Made By Guangmin Haralick (www.playdance.haralick.org)
All copper tubes are one foot long
Cuvettes were treated in the center
Play video

Acadia Water 1

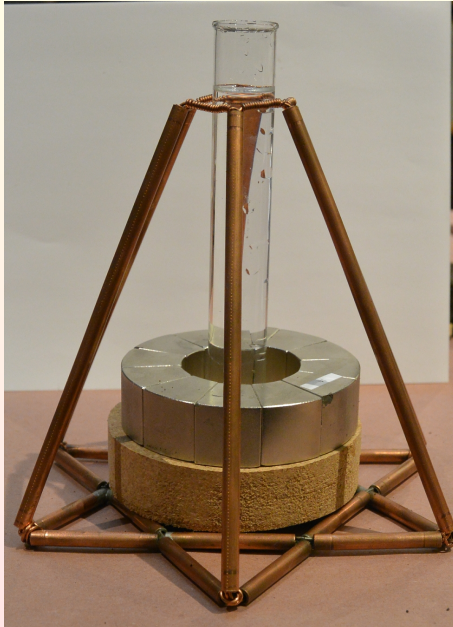# Idaho Spring Water

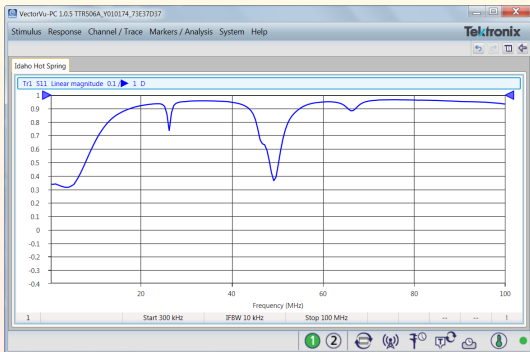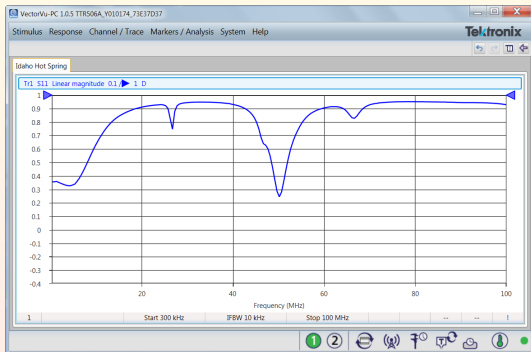- Experiments have protocols
- Protocols must be specific enough to allow replication
- Protocols must eliminate or control for hidden variables

Holy One of All Being,
All Encompassing Cosmic Consciousness,
We Bless You with all our hearts,
With all our bodies and souls,

We are thankful
For all that You have created,
For all that You have given,
And for all your daily miracles.

We are about to embark on a subtle energy experiment,
To search out and reveal some your mysteries:

Mysteries about energy, consciousness, aliveness, and memory;
Mysteries about one consciousness communicating to
And influencing another consciousness;
Mysteries about how liquid and solid crystals are conscious,
Have memory and are alive;
Mysteries about how liquid and solid crystals
Can participate in helping humans
To have greater health and be better people;
Mysteries of how we can participate in helping
Liquid and solid crystals fulfill their purpose for being.

Our collective intent is use the knowledge
Obtained by the experiment
To help improve the lives and health of humanity.

Choose one:
_____

We want the experiment not to depend
On the consciousness of the experimenter.
We ask that the observer consciousness effect be deactivated.

_____

We want the experiment to depend
On the consciousness of the experimenter,
We ask that the observer consciousness effect be activated.

_____

With deep respect,
We ask permission to do the experiment.
We ask permission from all the experimental apparatus,
Including the involved liquid and solid crystals
For your participation in the experiment.

We activate our intention to clear any noisy imprinting
For all items that might be on the experiment table.
We ask that all life nurturing and beneficial energies
That affect us, and everything involved in the experiment
Increase and be enhanced.

Experiment Preparation Meditation

We ask that all life negative and detrimental energies
That affect us and everything involved in the experiment
Decrease and be diminished. No one shall be harmed.

For now, and into the future,
For as long as appropriate.

With deep gratitude,
Thankyou for receiving our good intentions and prayer.
We remain your loving helpers.