Subtle Energy, Water, Experiments

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Many long talks with Loren Zanier are thankfully acknowledged.

Subtle Energy

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.

Subtle Energy

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?
  - How can something cause a change if there is no energy exchanged?

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]

[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
  - Vibrations
  - Geometric Shapes
  - Coherent Domains Introduction
    - 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
- QED and Coherent Domains
- The Frequencies of Water
- Some Experiments

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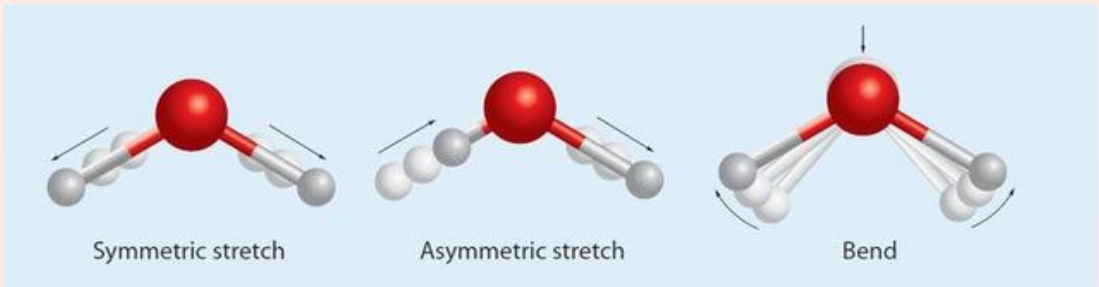
Water

- 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]

[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.

Vibrations

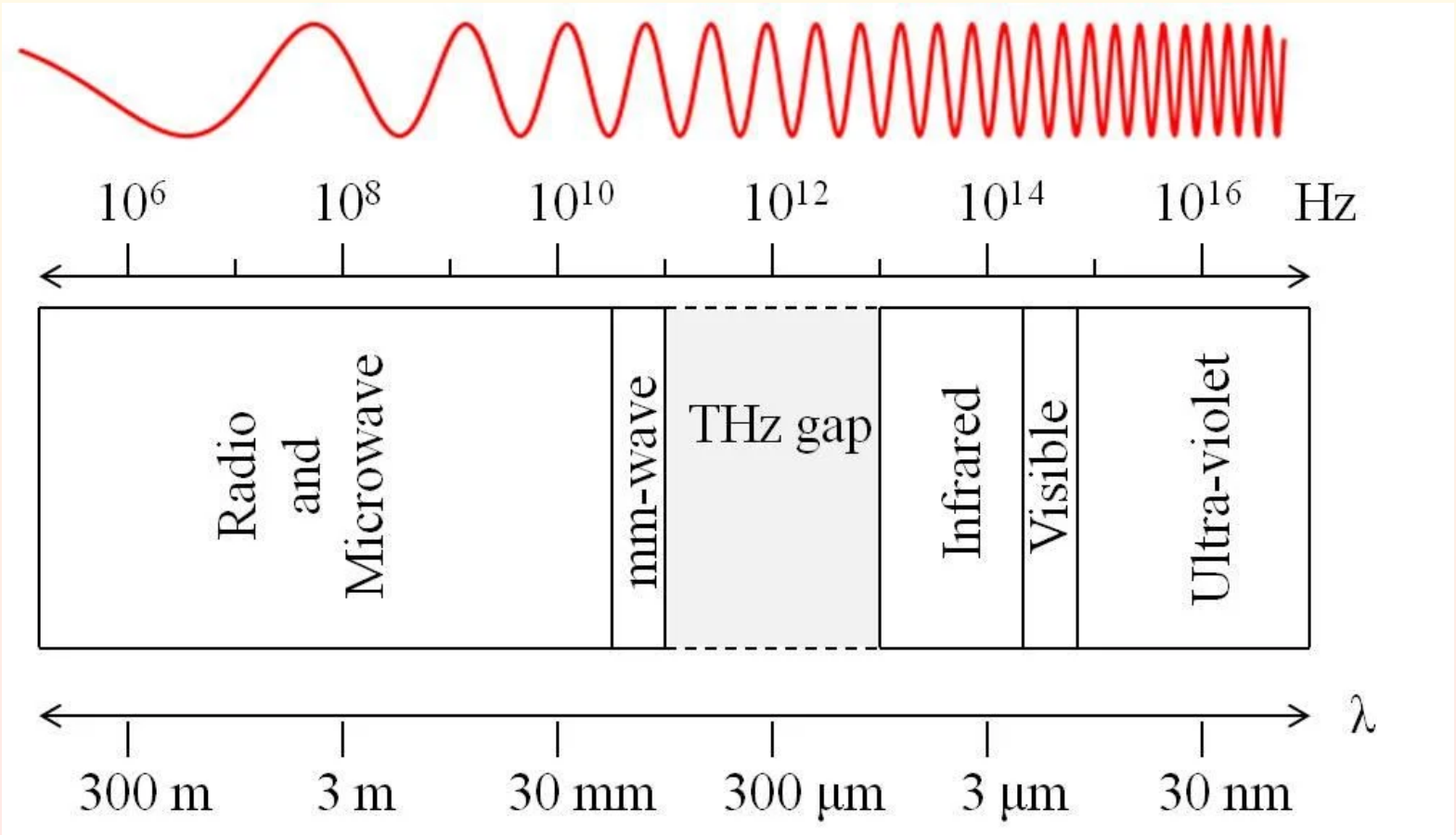
- In water, the bonding of the hydrogen atoms of water to the oxygen atom has six modes of vibrating. The main three are:
- Symmetric stretch: v_1
  - The two hydrogen atoms move together further and then closer to the oxygen atom:
- Asymmetric stretch: v_2
  - As one hydrogen atom moves closer to the 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



The Spectrum

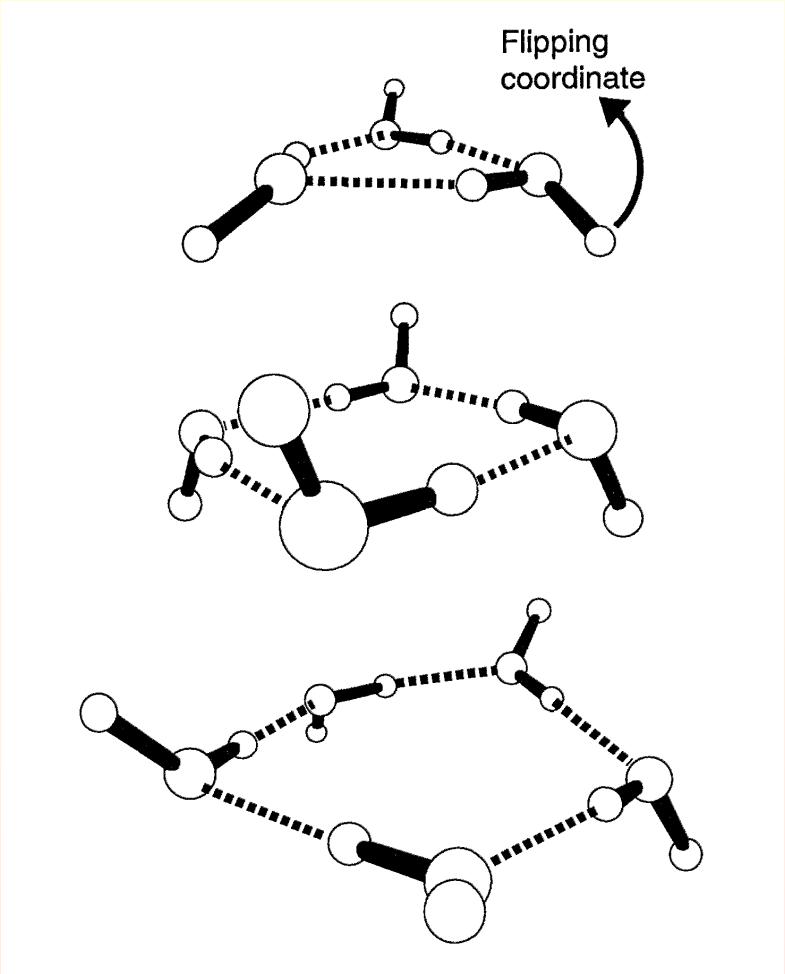
Longer Wavelengths
Lower Frequencies

Shorter Wavelengths
Higher Frequencies



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

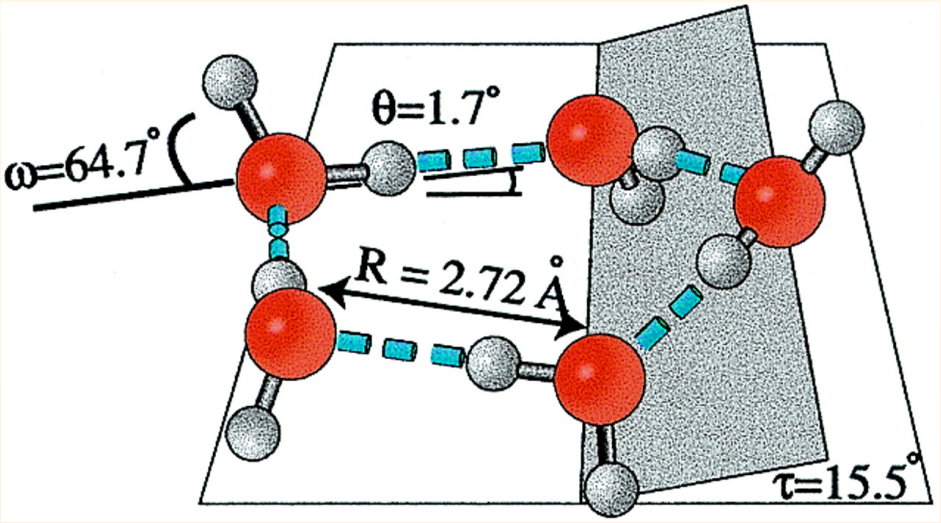
Small Water Clusters



Water Trimer, Tetramer, and Pentamer

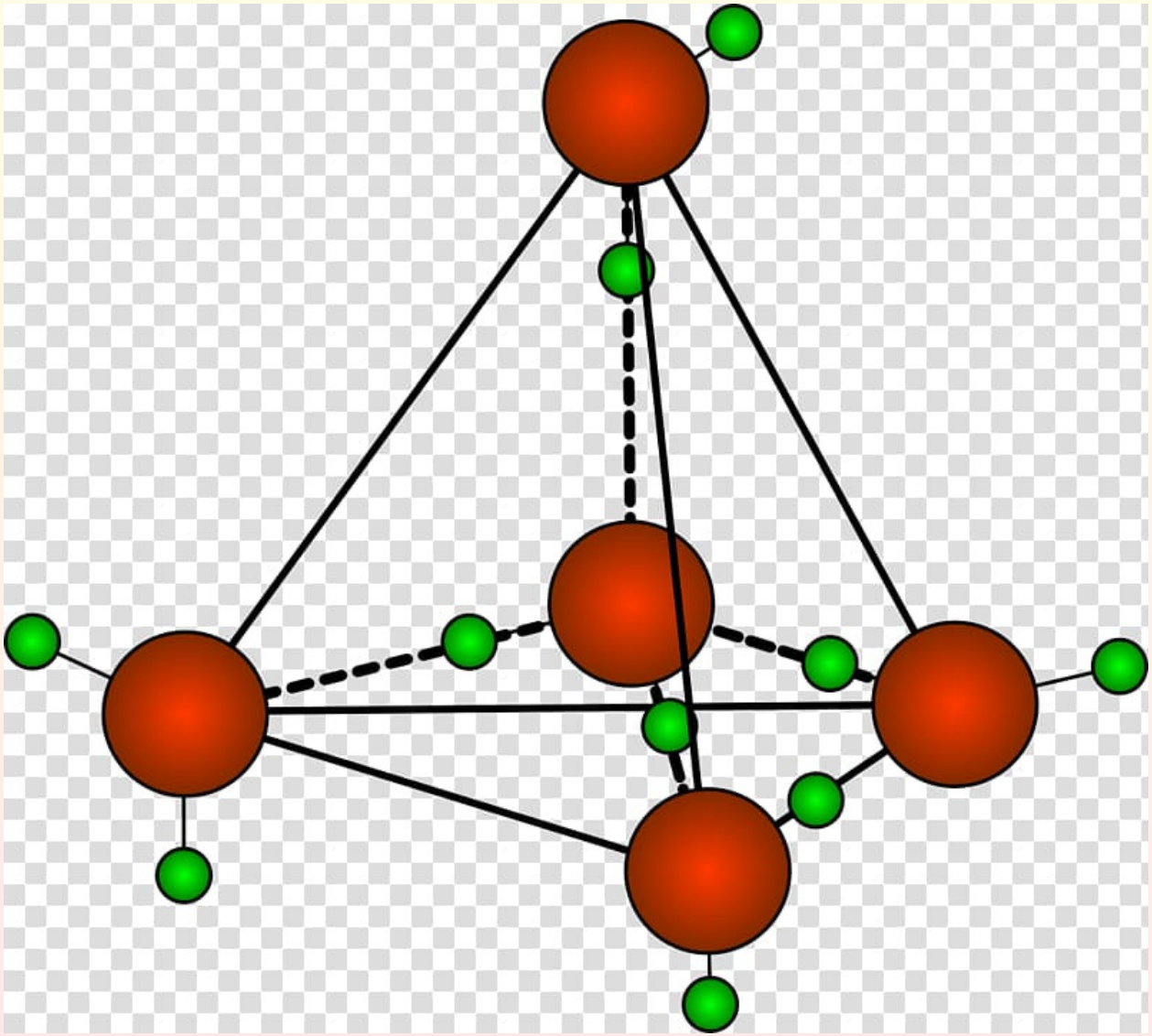
Liu et. al., *Water Clusters*, **Science**, Vol. 271, No. 5251, 1996, pp. 929-933.

Pentamer



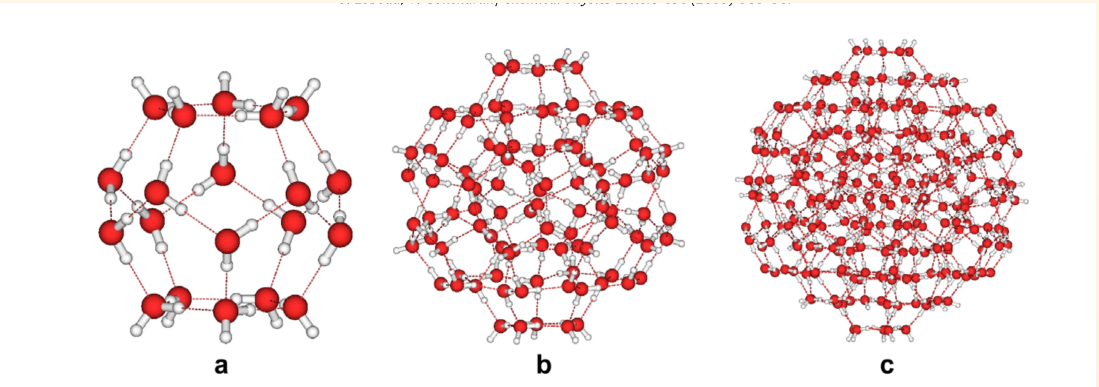
Notice that the pentamer is not planer

Tetrahedral



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.



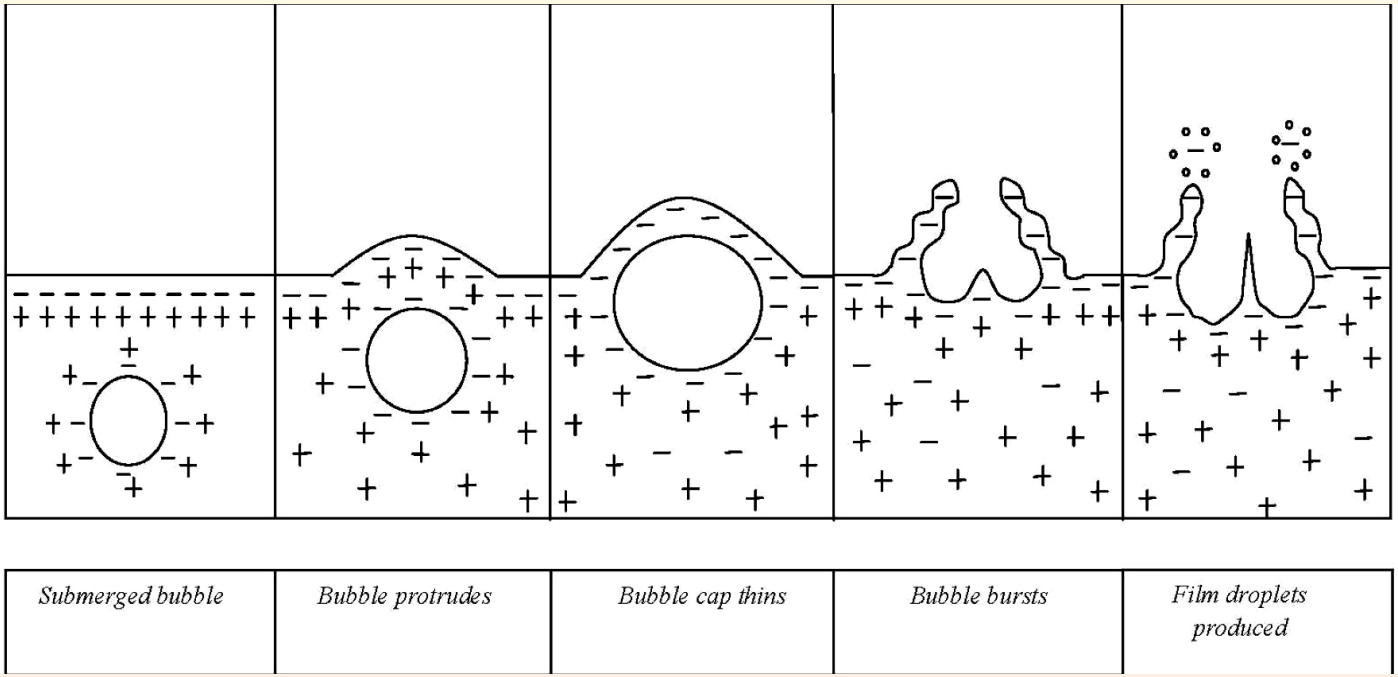
- (a)Dodecahedral $(H_2O)_{20}$
- (b)Homological Icosahedral $(H_20)_{200}$
- (c)Homological Icosahedral $(H_2O)_{280}$

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

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

Bubbles and Surface Charges



Bhatacharyya et. al., *Charge Separation From Bursting of Bubbles on Water*, **J. Physical Chemistry A**, Vol 115, 2011, pp. 5723-5728.

Introduction to Coherent Domains

- Water also has a structure of Coherent Domains
- The structure forms because random quantum fluctuations
- Zero Point Energy
- Vector Magnetic Potential Field
- Electric Potential Field
- Potential Fields Carry No Energy

Coherent Domains

- A coherent domain in water is a resonating cavity
  - Where the molecular vibrations are in unison
  - Their electrons all act as if there were only one electron
  - Whose size is the wavelength of the Electromagnetic Field
  - Associated with the molecular vibrations
- Explaining it is done through Quantum ElectroDynamics (QED)
- The Explanation Involves The Potential Fields
  - The Electric Potential Field
  - The Vector Magnetic Potential Field

Coherent Domains

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.

High Entropy to Low Entropy

- From Quantum Fluctuations
- Low grade energy with high entropy
- The Coherent Domains transform the high entropy energy
- Into low entropy energy
- By exciting coherent vortices of the almost free elections
- In the Coherent Domain

Claudio Messori, *Deep into the water: Exploring the Hydro-Electromagnetic and Quantum-Electrodynamic Properties of Interfacial Water in Living Systems*, **Open Access Library Journal**, Vo1. 6, 2019, pp. 1-61.

Dielectric Constant

- Coherent and Incoherent waters have different dielectric constants
- The Coherent phase has a dielectric constant of 160
- The Incoherent phase has a dielectric constant of about 15

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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 magnetic 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.*

The Potentials

Because of these reasons, the electric potential Φ and the vector magnetic 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.

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

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

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

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

Maxwell's Deduced Wave Equation

The second order partial differential equation that is called the wave equation was known since the 1700's. One of Maxwell's major contributions is that he derived from his four equations, that the Electric Field $\vec{E}$ and the Magnetic Flux Field $\vec{B}$ satisfy wave equations and therefore the Electric Field and the Magnetic Flux Field can be fields of waves.

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

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

Relationship Between Potentials and the Force Fields

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

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

If Λ is a continuously differentiable function that vanishes at infinity, and Φ 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.
QED treats the potential fields as primary.

Invariance Of $\vec{B}$

$$
\begin{aligned}
\vec{B}' &= \vec{\nabla} \times \vec{A}' \\
&= \vec{\nabla} \times (\vec{A} + \vec{\nabla}\Lambda) \\
&= \vec{\nabla} \times \vec{A} + \vec{\nabla} \times (\vec{\nabla}\Lambda) \\
&= \vec{\nabla} \times \vec{A} \\
\vec{B}' &= \vec{B}
\end{aligned}
$$

Invariance Of $\vec{E}$

$$
\begin{aligned}
\vec{E}' &= -\vec{\nabla}\phi' - \frac{\partial \vec{A}'}{\partial t} \\
&= -\vec{\nabla}\left(\phi - \frac{\partial \Lambda}{\partial t}\right) - \frac{\partial}{\partial t}(\vec{A} + \vec{\nabla}\Lambda) \\
&= -\vec{\nabla}\phi + \vec{\nabla}\frac{\partial \Lambda}{\partial t} - \frac{\partial \vec{A}}{\partial t} - \frac{\partial}{\partial t}(\vec{\nabla}\Lambda) \\
&= -\vec{\nabla}\phi - \frac{\partial \vec{A}}{\partial t} \\
\vec{E}' &= \vec{E}
\end{aligned}
$$

Potential Functions

If the potential functions ϕ and $\vec{A}$ have influence in quantum electrodynamics, (QED) then two related potential functions $(\phi, \vec{A})$ and $(\phi', \vec{A}')$ could cause different outcomes in QED while the corresponding Electric and Magnetic Fields would cause the same outcomes if QED theory were to use them.

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The Aharonov and Bohm

- Yakir Aharaonov, the PhD student
- David Bohm, the professor
- Published a paper in 1959 suggesting that
- Contrary to the conclusions of classical electrodynamics,
- That the potential fields can cause an effect on charged particles
- Charged particles, even in the region where all the fields, and therefore the forces on the particles vanish, are affected by the Potential Fields.

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

The Ruckus

- Up to the publication of the Aharonov Bohm paper, the potential fields were considered mathematical niceties in that by using them some electrodynamic proofs could be done simpler.
- They were not considered to be real. Only a mathematical convenience.
- That is the reason that Heaviside never in his writings discussed that the potential fields could be real.
- This was the position of the physicists and the electrical engineers from the early 1900's through 1959.
- Now Aharonov and Bohm suggest that the potential fields could be real and could have a measureable effect in QED.

Potential Fields Carry No Energy

- How could one thing affect another if the first thing carries no energy?
- Clearly it was thought that is impossible
- Hence the criticism that came from the physicists and electrical engineers caused a ruckus, a sensation
- Many papers were published arguing against the possibility of the effect

The Experiments

The first experiment confirming the hypothesis that the potential field could cause an effect was done by Robert Chambers in 1960.

- The experiment was done in accordance with the suggestion in the Aharonov Bohm paper
- The results provided evidence for the existence of the effect
- Now there was scrutiny over the experiment
- In what way could there have been a leakage of the force fields to cause the effect?

R.G. Chambers, *Shift of An Electron Interference Pattern by Enclosed Magnetic Flux*, **Physical Review Letters**, Vol. 5, No. 1, pp. 3-7

The Final Evidence

- For the next 26 years, there were more experiments
- More papers published describing the experiments
- Every experiment confirmed the effect
- Every experiment was criticized
- More papers were published arguing against the effect
- In 1986 Tonomura et. al. did an experiment in such a way that there was no more criticism
- The Aharonov Bohm Effect is real

Akira Tonomura, et. al.,*Evidence for Aharonov-Bohm effect with magnetic field completely shielded from electron wave*, **Physical Review Letters**, Vol. 56, Issue 8,1986, pp 792-295

Wave Equation for Potentials

The potential fields also satisfy the wave equation.

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

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

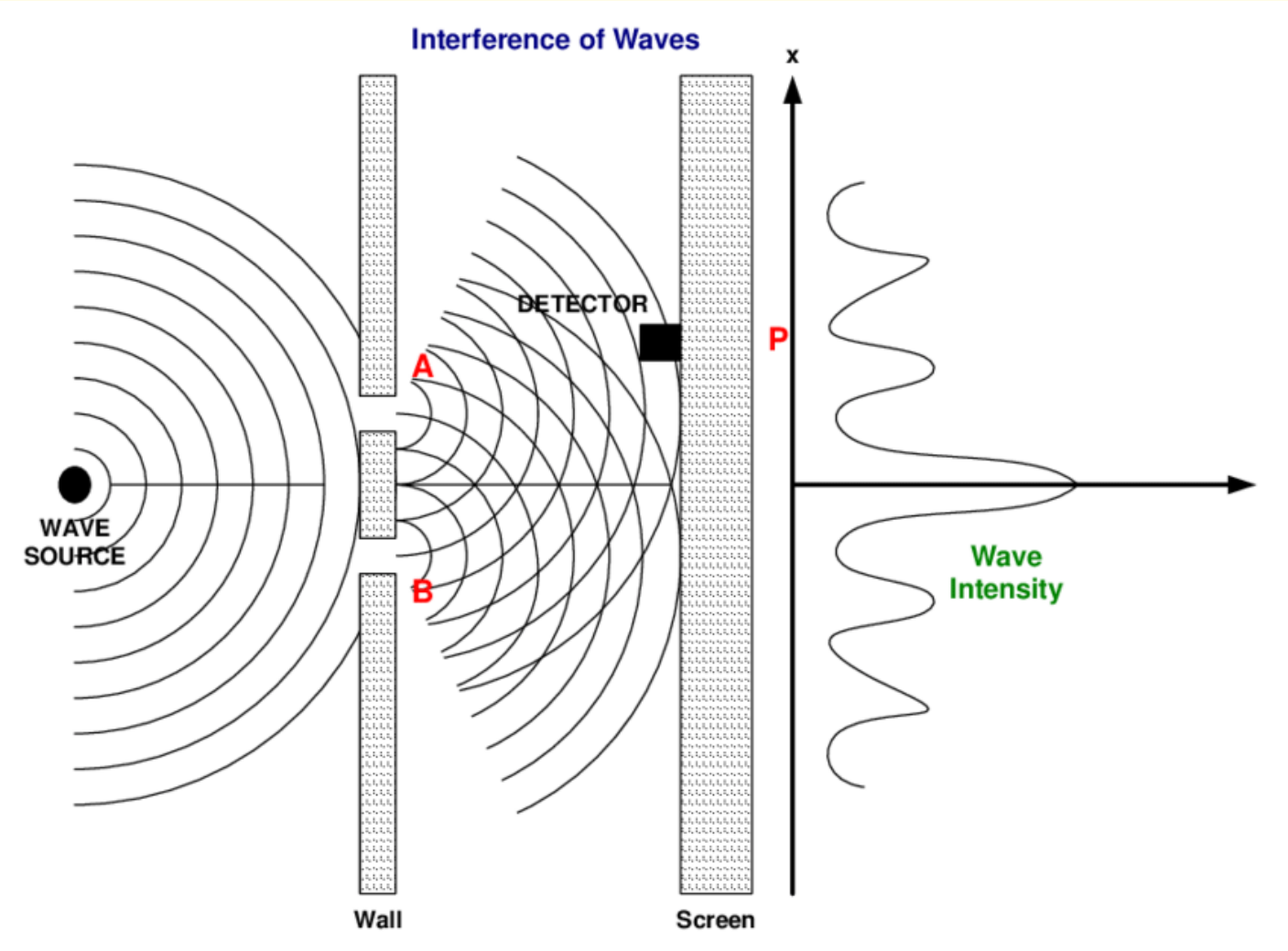
In Cartesian Coordinates,

$$\nabla\Phi = \begin{pmatrix} \frac{\partial\Phi}{\partial x} \\ \frac{\partial\Phi}{\partial y} \\ \frac{\partial\Phi}{\partial z} \end{pmatrix}$$

$$\nabla^2\Phi = \nabla\cdot\nabla\Phi = \left(\frac{\partial^2\Phi}{\partial x^2} + \frac{\partial^2\Phi}{\partial y^2} + \frac{\partial^2\Phi}{\partial z^2}\right)$$

$$\nabla^2\vec{A} = \left(\nabla^2 A_x + \nabla^2 A_y + \nabla^2 A_z\right)$$

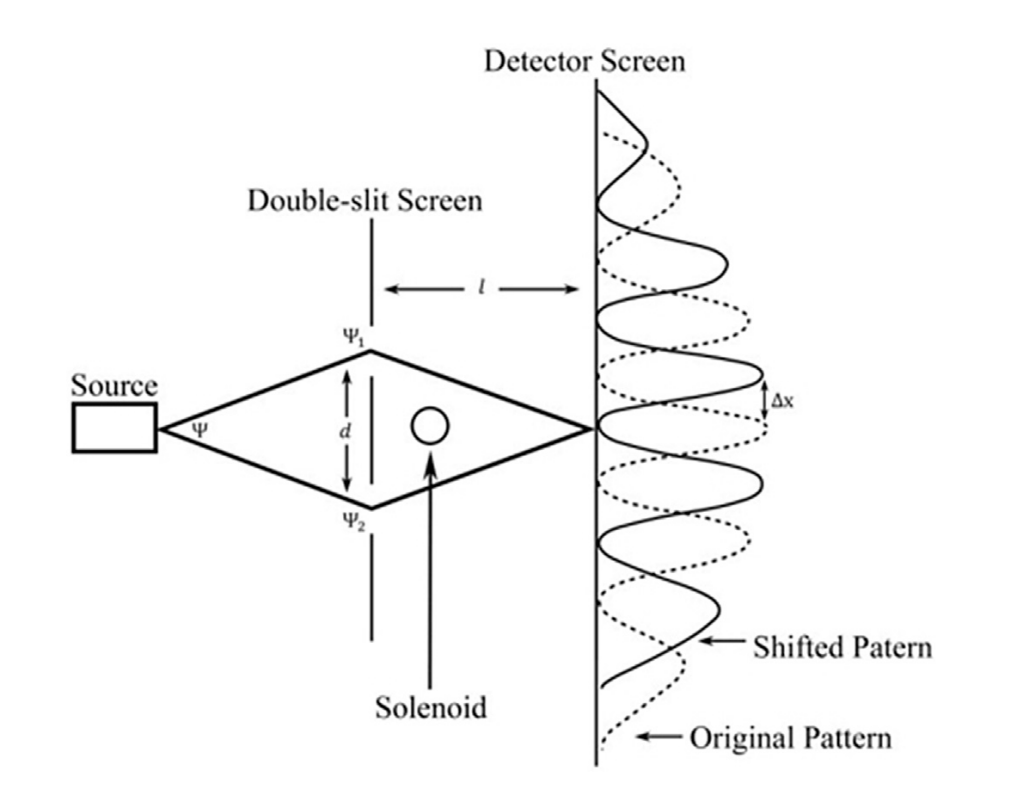
Classic Double Slit Experiment



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.

Shech, *Idealizations, essential self-adjointness and minimal model explanation in the Aharonov-Bohm Effect*, **Synthese**, Vol 195, No. 11, 2018, pp. 4839-4863.

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The Coherent Domain

- Coherent Domains form in water
- Size of Coherent Domain is the wavelength of the oscillation
- Molecules oscillate in unison between two single-particle states
- In tune with a non-vanishing EM field trapped in the ensemble of molecules
- Understand this with Quantum Electrodynamics {QED}

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 relative to the potential fields

The Ground State

- The random fluctuations of the quantum system constitute the ground state
- The small fluctuations (oscillations) are not independent and 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.

Phase, Magnetic Vector Potential, Electric Potential

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

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.

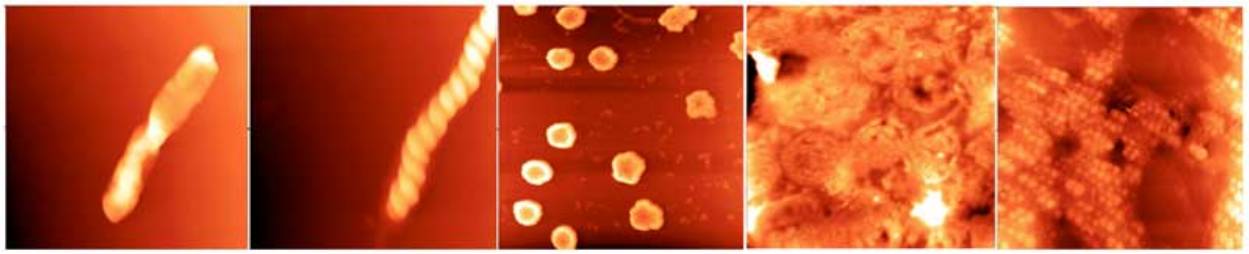
> *The phase correlations within the ensemble of coherent molecules are kept not by the EM fields, but by their potentials, which propagate in space at the phase velocity, which, as is well-known, could be larger than c.*

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

Atomic Force Microscope Pictures



Different forms of supramolecular water clusters images taken with an atomic force microscope

Mae-Wan Ho, *Large Supramolecular Water Clusters Caught on Camera - A Review*, **Water**, Vol. 6, 2014, pp. 1-12.

Coherence Questions

- Why should molecules move in unison?
- Collectively tune their oscillations?
- Respond in unison to external perturbations?
- This is what prompted Herbert Frölich to introduce quantum mechanics
- As a theoretical tool for biology
- And to put coherence
- The property of an assembly of elementary components to have
  - The same rhythm of oscillation
  - The same phase
  - At the center of biological dynamics

Herbert Frölich, *Long-range Coherence and Energy Storage in Biological Systems*,**International Journal of Quantum Chemistry**, Vol. 2, Number 5,1968, pp.641-649.

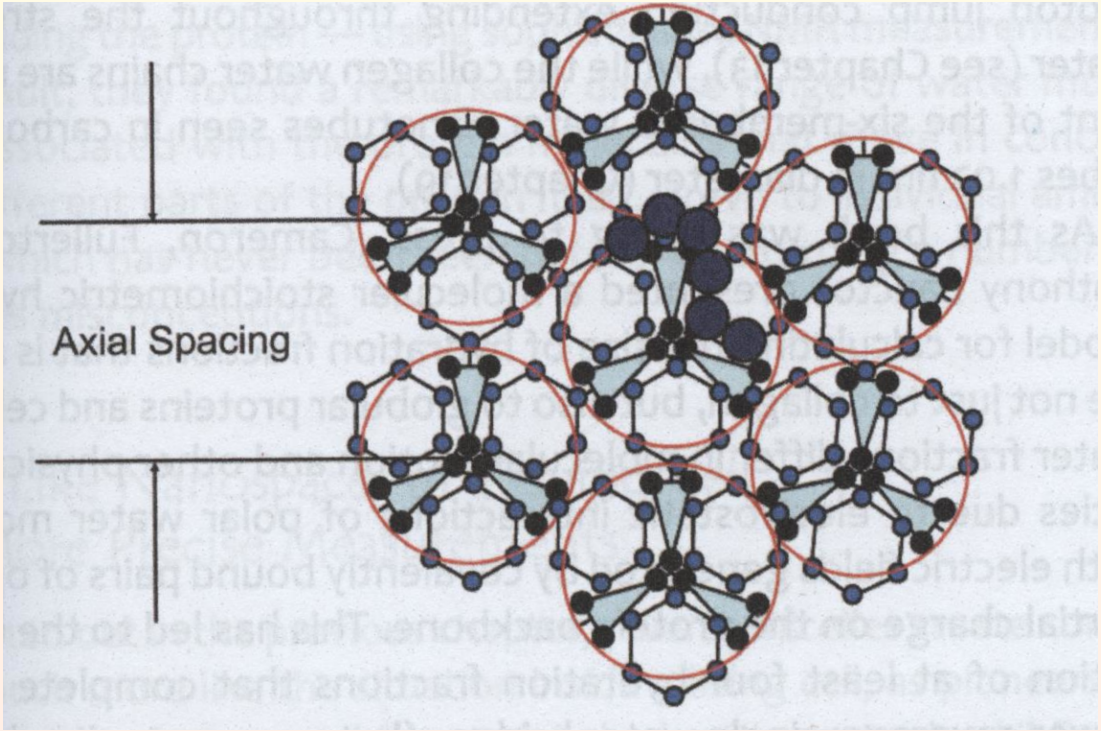
The Coherent System

- Large number N of particles
- Whose density N/V a critical threshold
- Whose temperature T lies below a critical value
- Settles into a new minimum energy ground state
- Where particles oscillate coherently between two states
- Belonging to their individual spectrum
- In tune with an EMF whose wavelength is on the order of the size of the coherent domain

Collagen

- Collagen is the most abundant protein in our body
- Collagen is the main protein in the exracelluar matrix and connective tissues
- Type I collagen is found in tendons, skin and vasculature
- The Water around collagen is Protein Bound Water

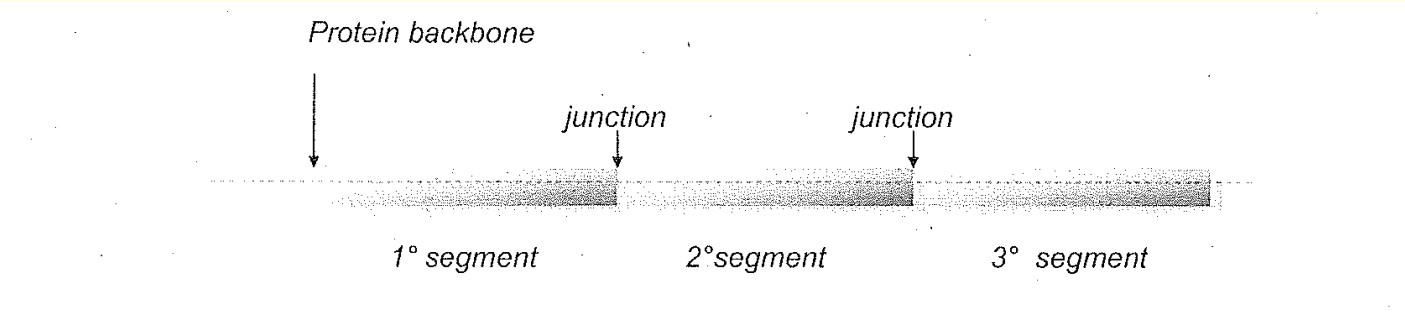
Collagen Fibril



Cross-section of a collagen fibril consisting of seven triple helices, each of which has 3×16 water chains covering it completely.

Mae-Wan Ho, *Living Rainbow H_2O*, **World Scientific**, New Jersey, 2012, p. 221.

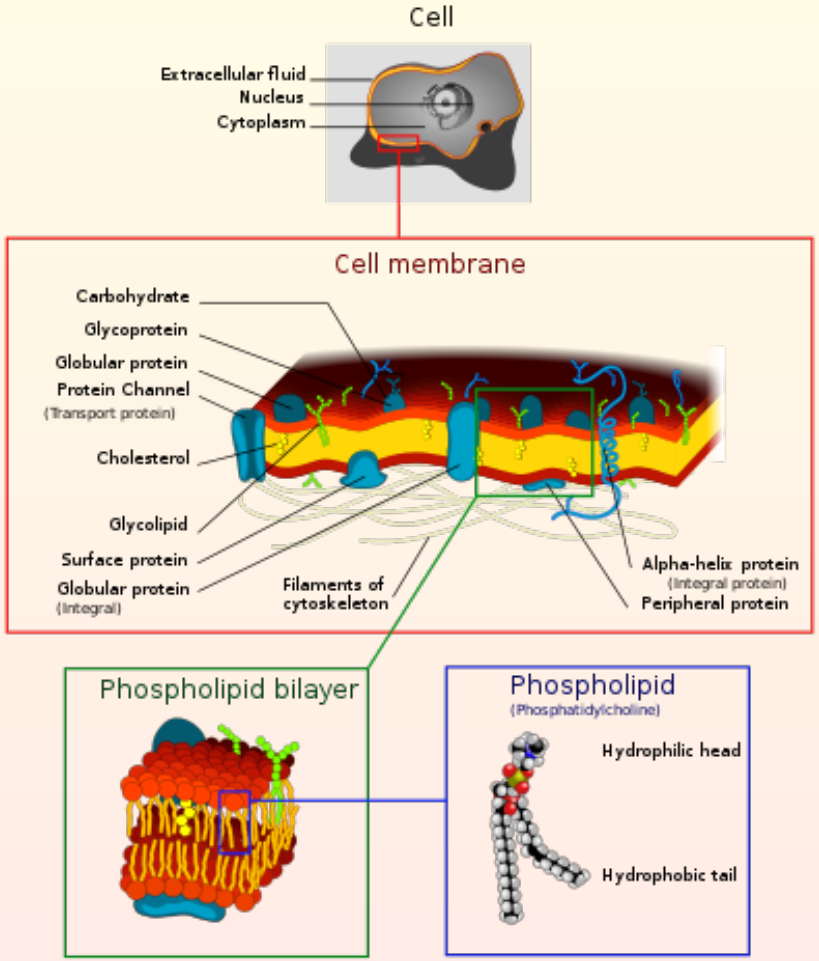
Protein Bound Water



Each segment 0.1μm in length is separated from the following segment by a Josephson Junction

- Long proteic chains
- Sequence of tubular segments of bound water
- Each .1 μm long protein segment is separated from the neighboring segment by a Josephson junction
- Bound water surrounds the bar backbone of the protein
- The thin interstice between 2 neighboring segments
- Is filled with noncoherent water
- Where electrolytes and other solutes are dissolved
- Coherent water is unable to dissolve anything

Cell Membrane



Cell Membrane has Glyucoprotein, Globular Protein, Peripheral Protein and Alpha-helix Protein

Cell Membrane Wikipedia

Quasi-Free Electrons

- The collective movement of the quasifree electrons induces an electric current
- The electric current I is proportional to the frequency ν
- That in turn produces a static magnetic field proportional to the current I
- Which generates a magnetic flux B across the CD tube
- The magnetic flux field B causes the Josephson effect
- Which is a Josephson supercurrent of ions along the tube
- The current is non-ohmic
- The Non-ohmic current shields the living organism from the heating Joule effects

Remark on Coherent Domain Oscillations

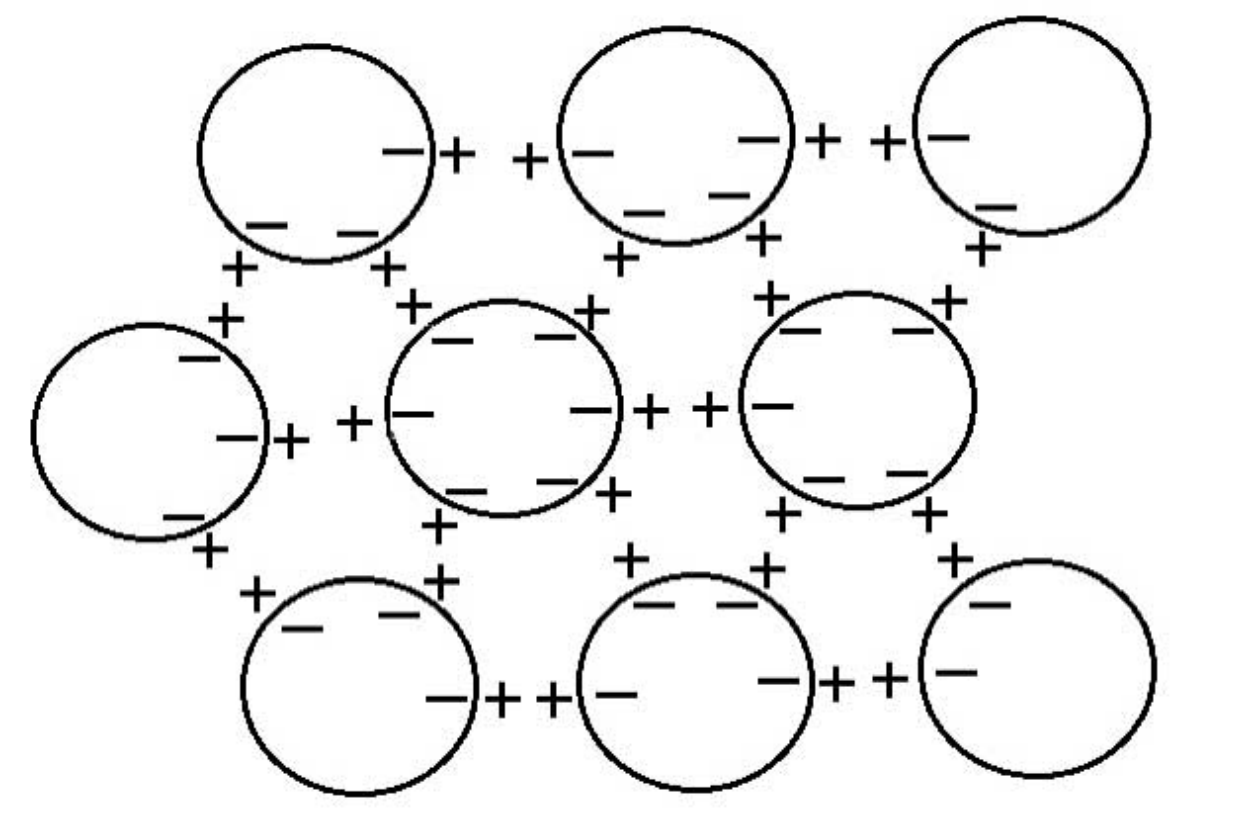
- Water Molecules Oscillate between
  - The ground state, relatively small $eV = .26$
  - And an excited state 12.06 eV
- The ionization potential of water is 12.56 eV
  - $H_2O \rightarrow \ 2H^{++}2e^{-} \ + O$
- If the coherent domain water molecules were to be oscillated at an energy about .5 eV volts more
  - Water would Split
  - Making H^{+} available to burn in the body

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 by the interface is a coherent domain
- Water at the interface is negatively charged
- Water just inside the coherent domain is positively charged

Negative and Positive Charges

This figure shows the negative and positive charges outside and inside spherical domains.



Mae-Wan Ho, *Large Supramolecular Water Clusters Caught on Camera - A Review*, **Water**, Vol. 6, 2014, pp. 1-12.

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

Gerald Pollack, **The Fourth Phase of Water**, Ebner and Sons, Seattle, 2013.

Interfacial Water

- Interfacial Water behaves in a quantum way
- Electrostatics do not apply
- Like Charges Attract
- Water near hydrophilic surfaces has higher viscosity
- The viscosity can range from 2 to 10^6 times greater than that of bulk water.

Claudio Messori, *Deep into the water: Exploring the Hydro-Electromagnetic and Quantum-Electrodynamic Properties of Interfacial Water in Living Systems*, **Open Access Library Journal**, Vo1. 6, 2019, pp. 1-61.

Proton Conduction in Interfacial Water

- Proton Jump Conduction
- Water jump conducts protons down a chain of water molecules
- Connected by hydrogen bonds
- A Proton leaps on at one end of the chain
- A Proton leaps off at the other end of the chain
- Electrons are displaced in the opposite direction
- The semi-conduction is much faster than the electrochemical conduction through nerves
- Because the charge displacements are very short ranged

Claudio Messori, *Deep into the water: Exploring the Hydro-Electromagnetic and Quantum-Electrodynamic Properties of Interfacial Water in Living Systems*, **Open Access Library Journal**, Vo1. 6, 2019, pp. 1-61.

Outline

- Water and its Structure
  - Vibrations
  - Geometric Shapes
  - Coherent Domains Introduction
    - 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
- QED and Coherent Domains
- The Frequencies of Water
- Some Experiments

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
- The weight per mole is related to the resonant frequency.

They discovered that the resonant frequencies were organized as a 12 tone Pythagorean chromatic scale over 48 octaves, from 1Hz to THz.
These are the 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.

Water: Cradle of Life

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

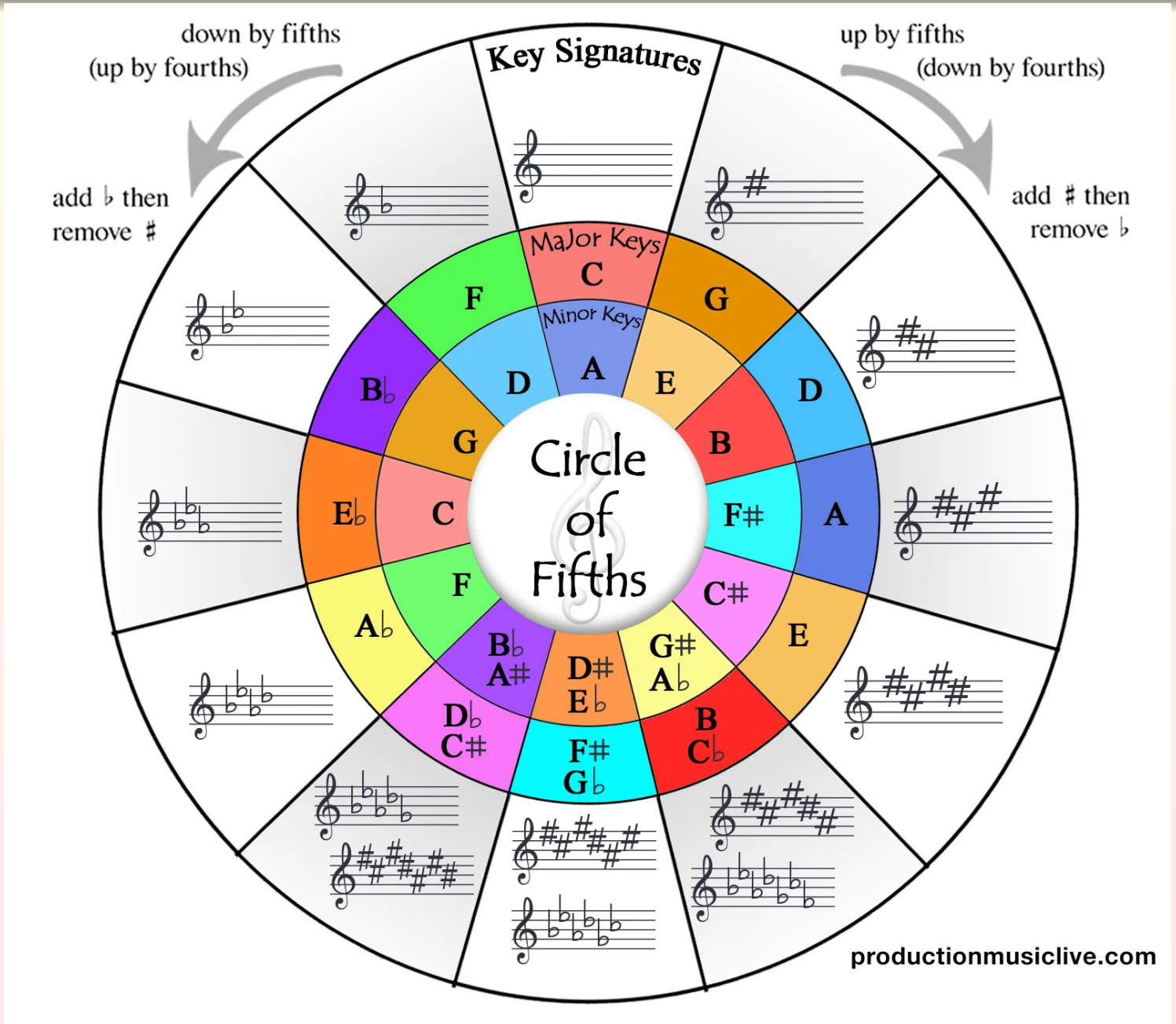
3. Since water molecules have a comparable distribution of coherent electromagnetic field bands to that of fluid assemblies in living cells, a resonant wave interaction is expected between the cytoplasm and surrounding water molecules.

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.

Circle of Fifths



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

Pythagorean Tuning Going Down the Circle of Fifths

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
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Generalized Musical Scale

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 $M = 18g/mol$ leads to a characteristic frequency $f = 54$ HZ.

Nurturing Frequencies

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

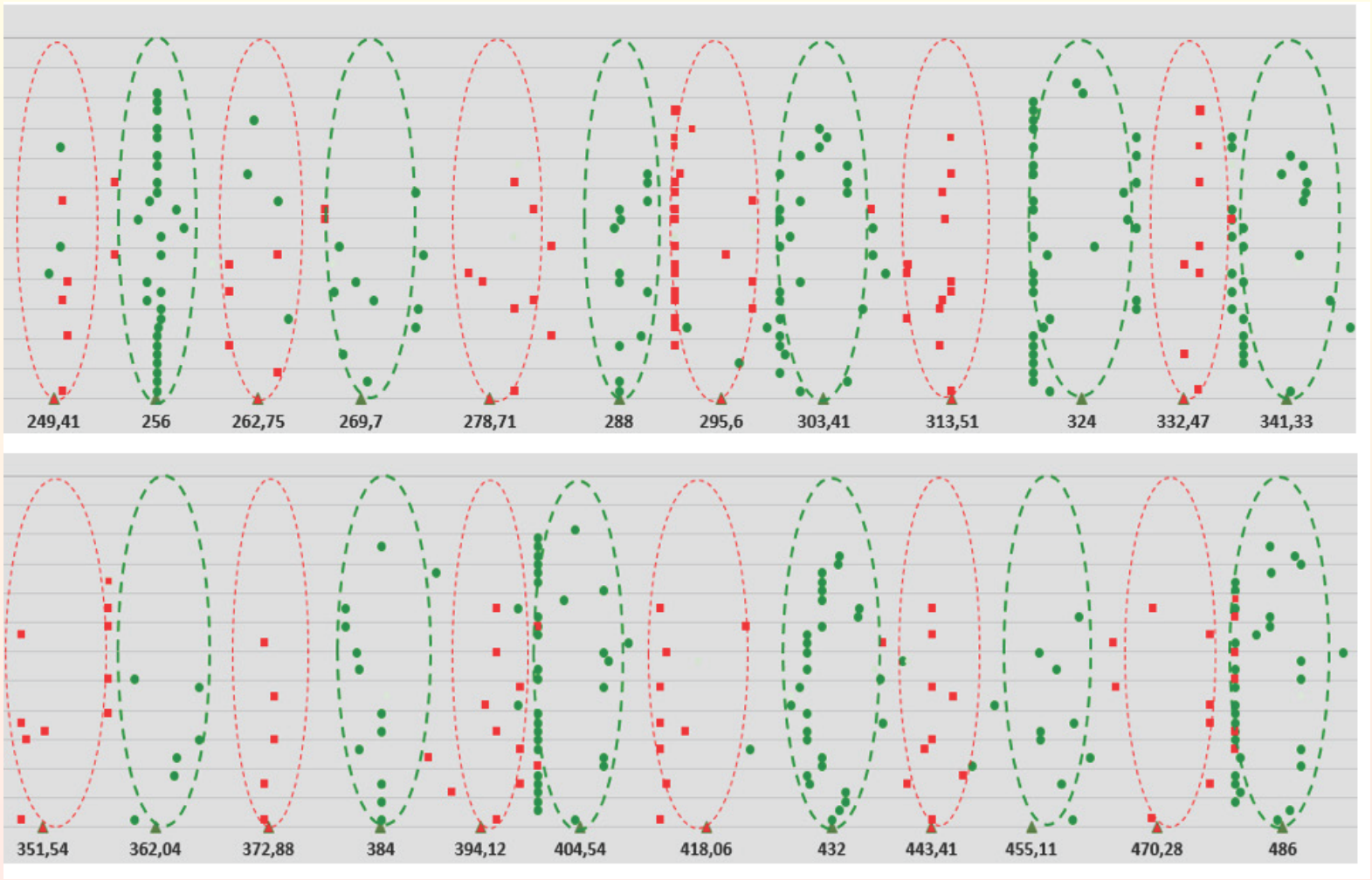
16.7-32 MHz:
16.77, 17.66, 18.87, 19.86, 21.24, 22.36, 23.90, 25.17, 26.53, 28.31, 29.83, 31.85 Mhz

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

Geesink and Meijer, *Quantum Wave Information of Life Revealed: An Algorithm for Electromagnetic Frequencies that Create Stability of Biological Order with Implications for Brain Function and Consciousness*, **NeuroQuantology**, Vol. 15, No. 1, 2016, pp.106-125

Life Sustaining: Life Detrimental



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.

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  - Vibrations
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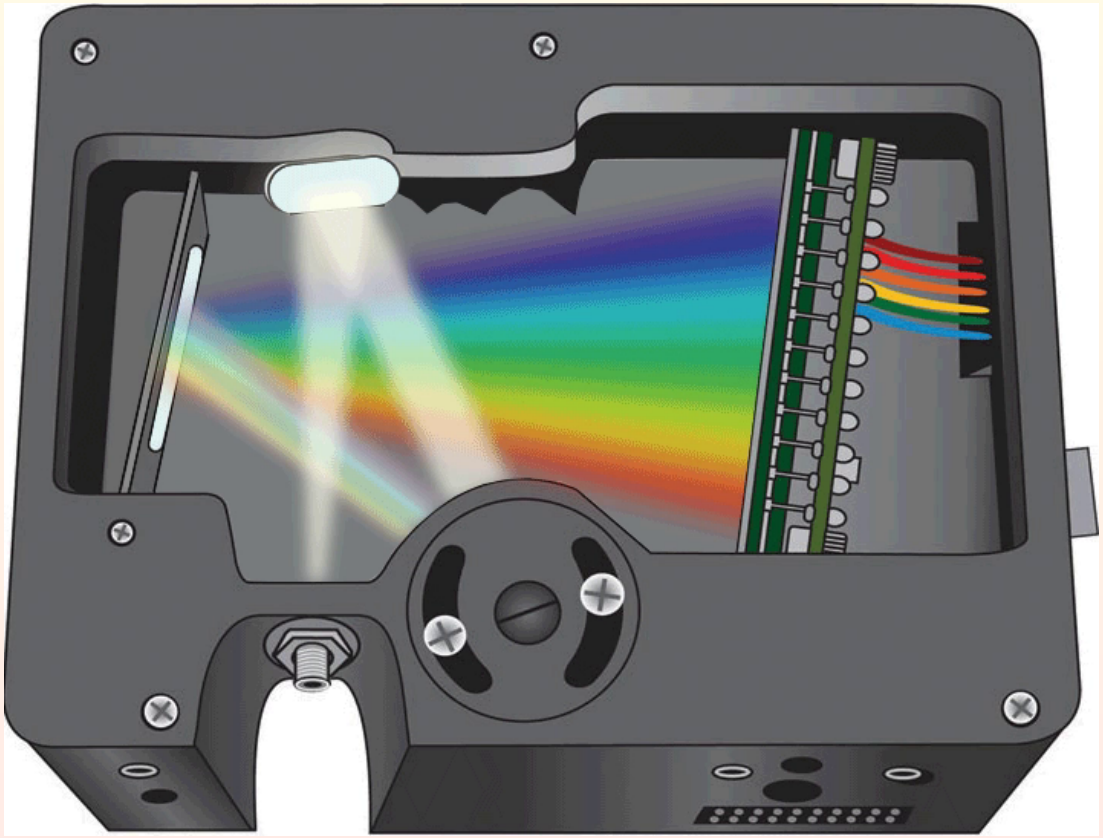
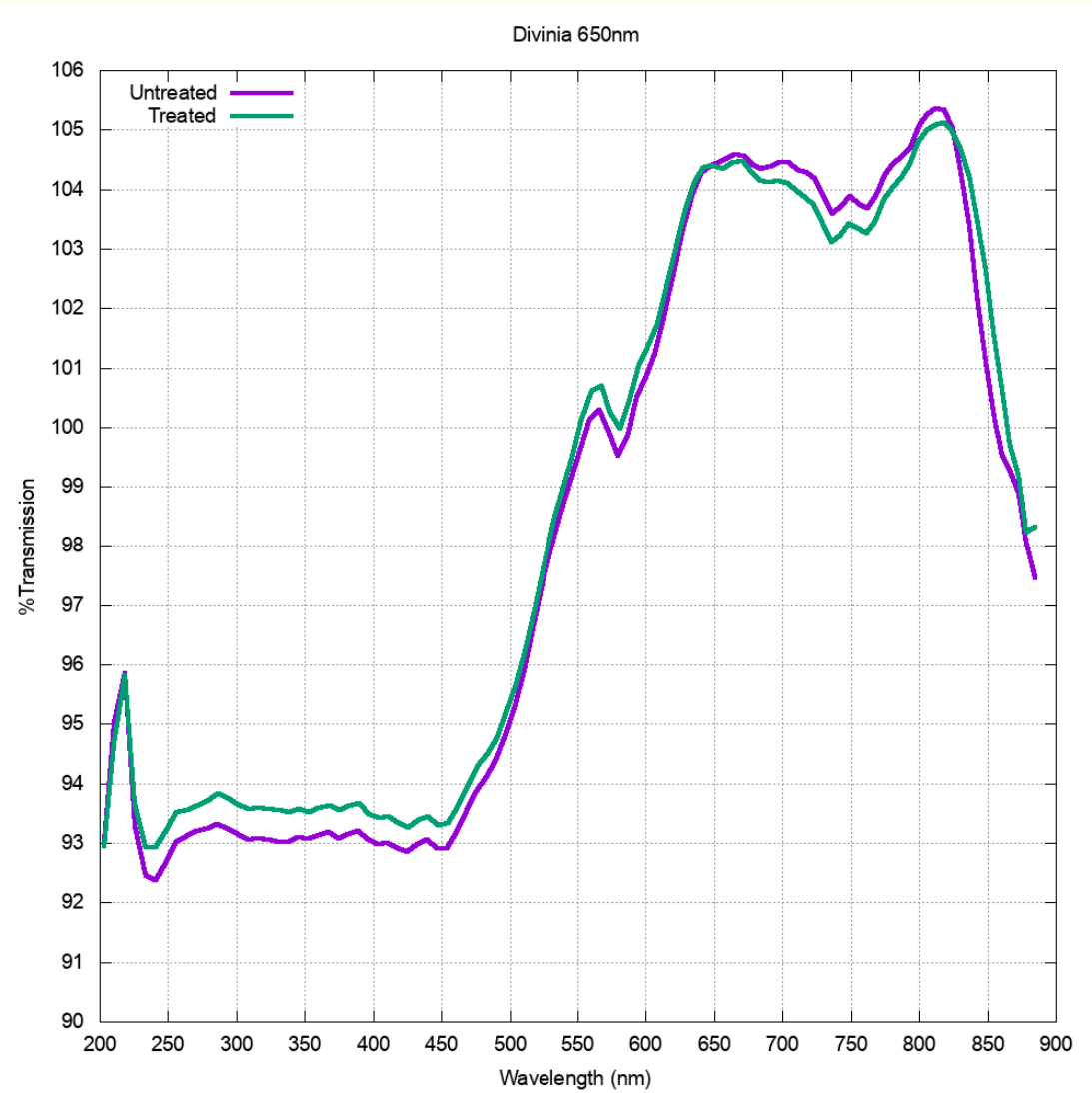
Ocean Optics Spectrometer

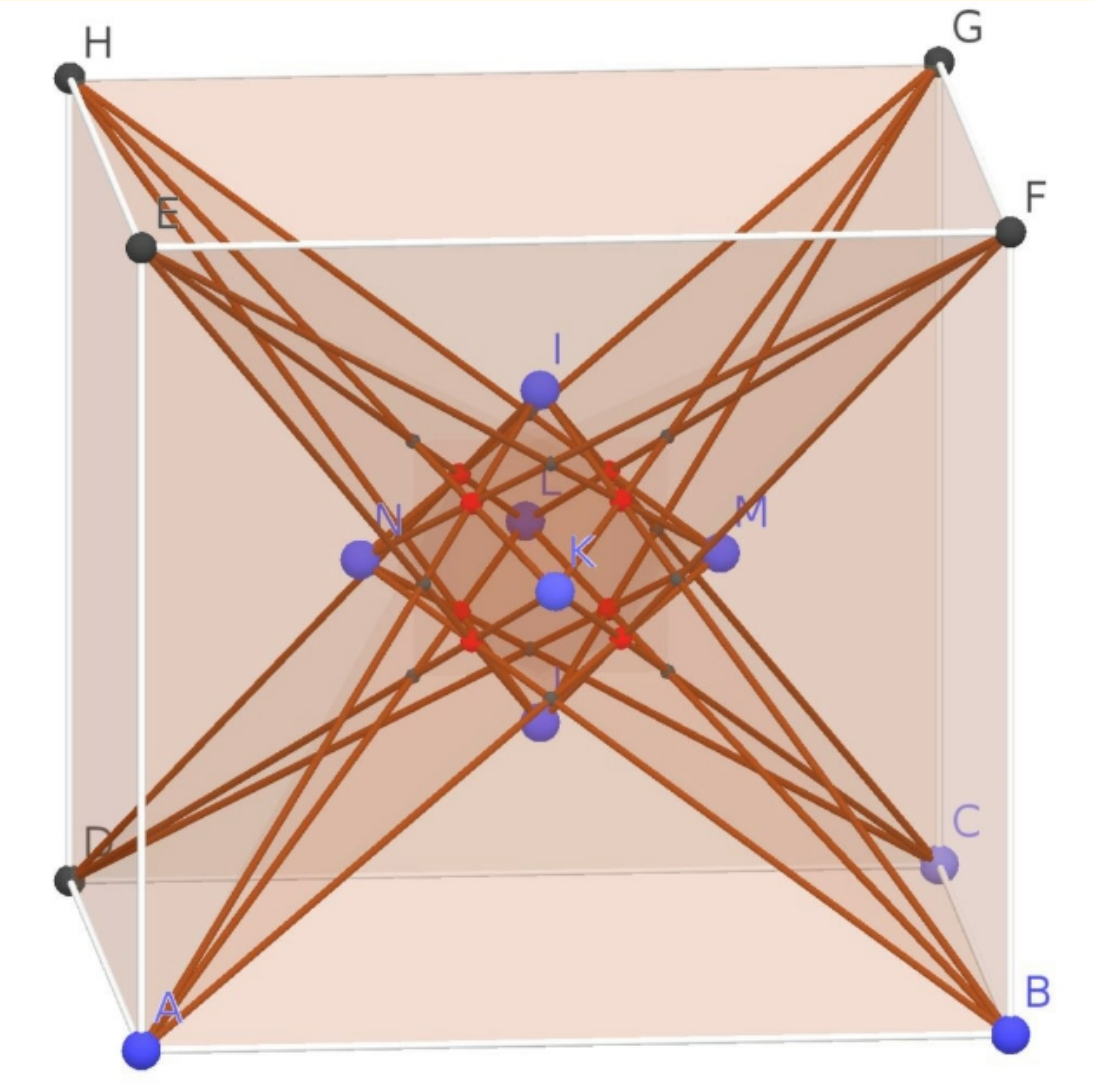
Ocean Optics Spectrometer



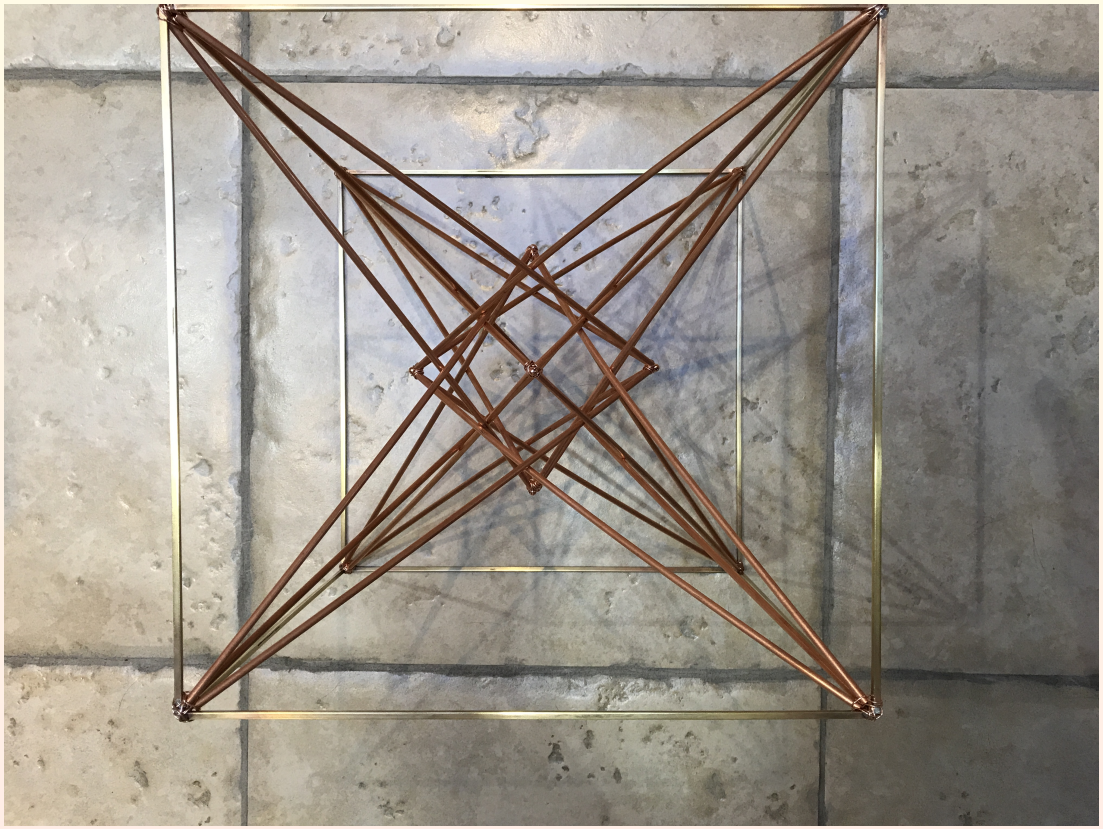
650nm Divinia Water



Copper ORB

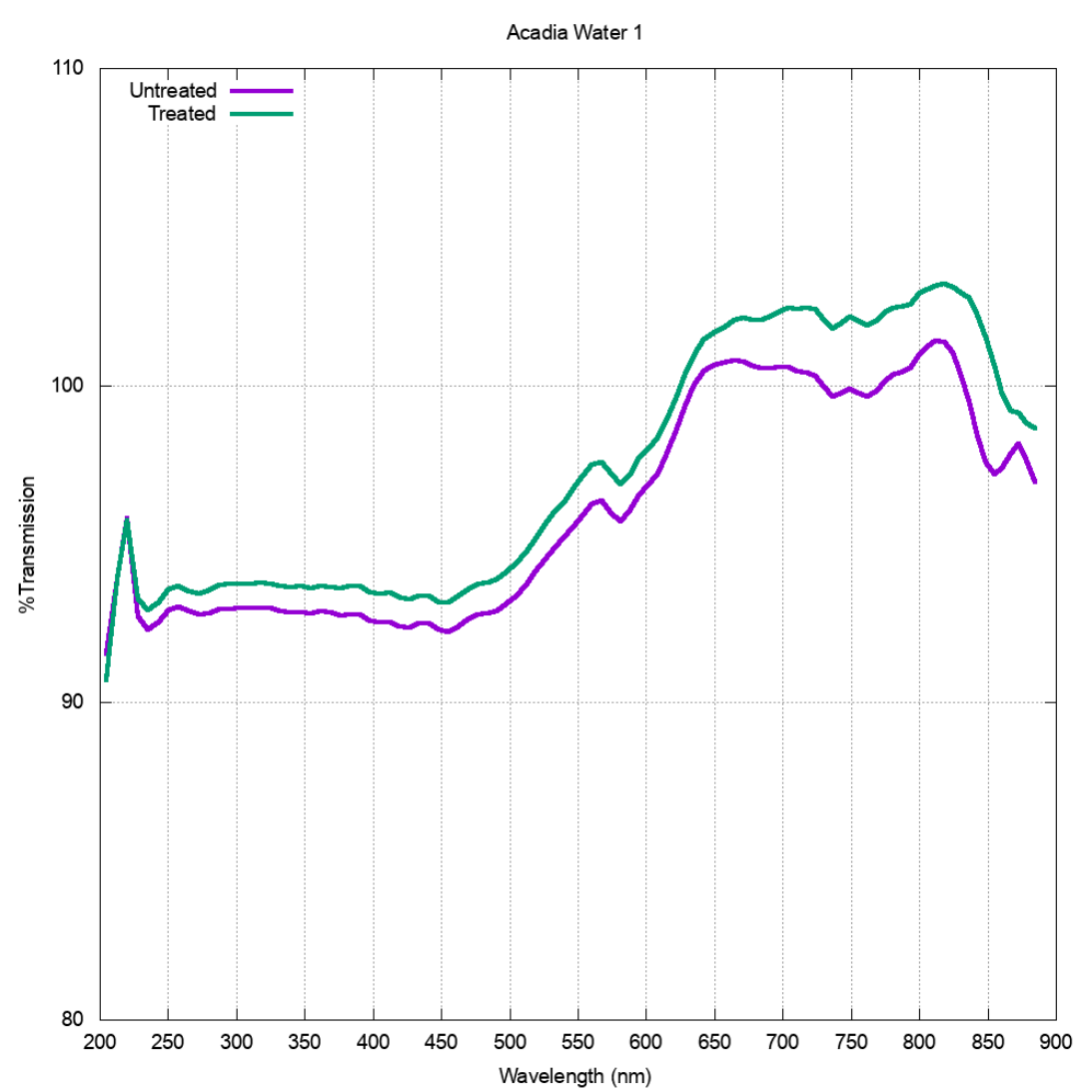


Copper ORB

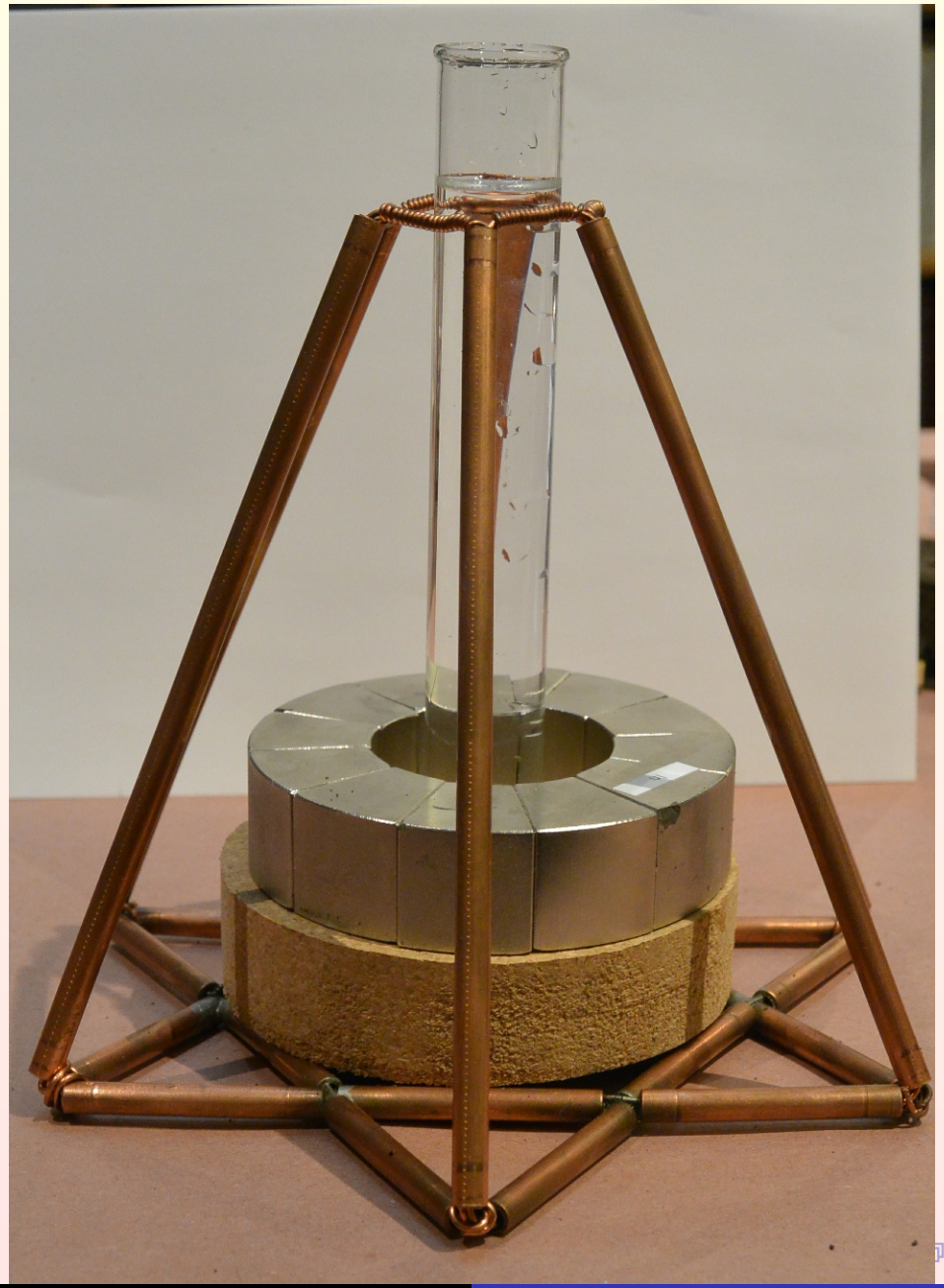


Made By Guangmin Haralick (www.playdance.haralick.org)
All copper tubes are one foot long
Cuvettes were treated in the center
Play video

Copper ORB Treatment Water 1

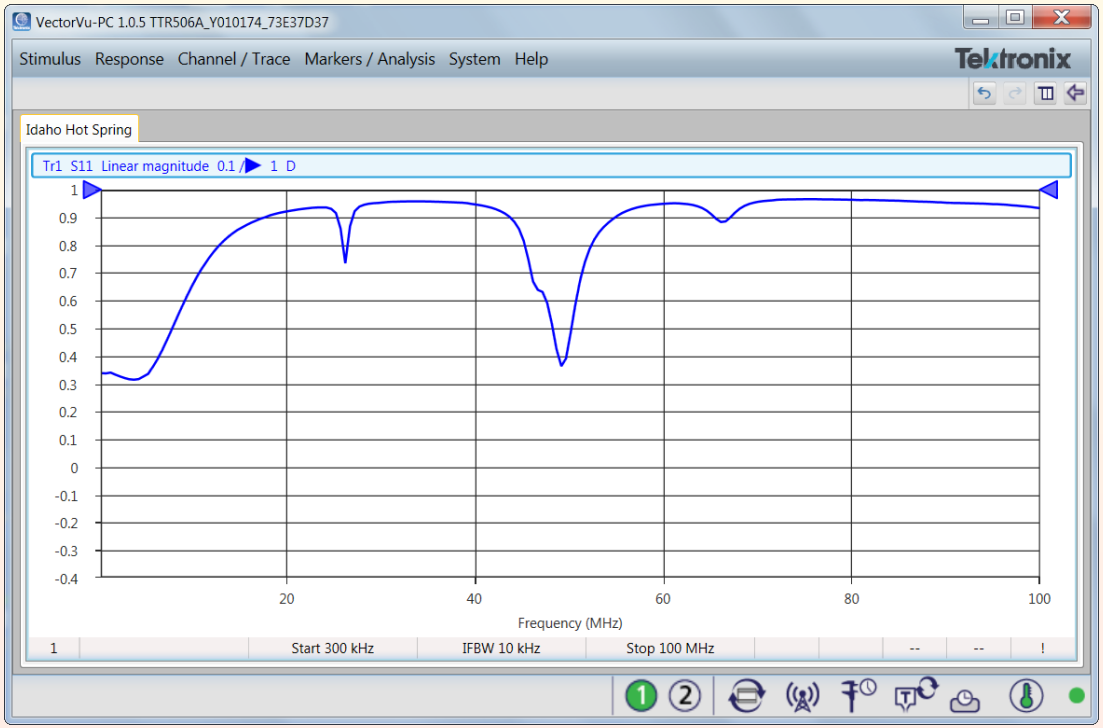


Idaho Spring Water Cirumferential In

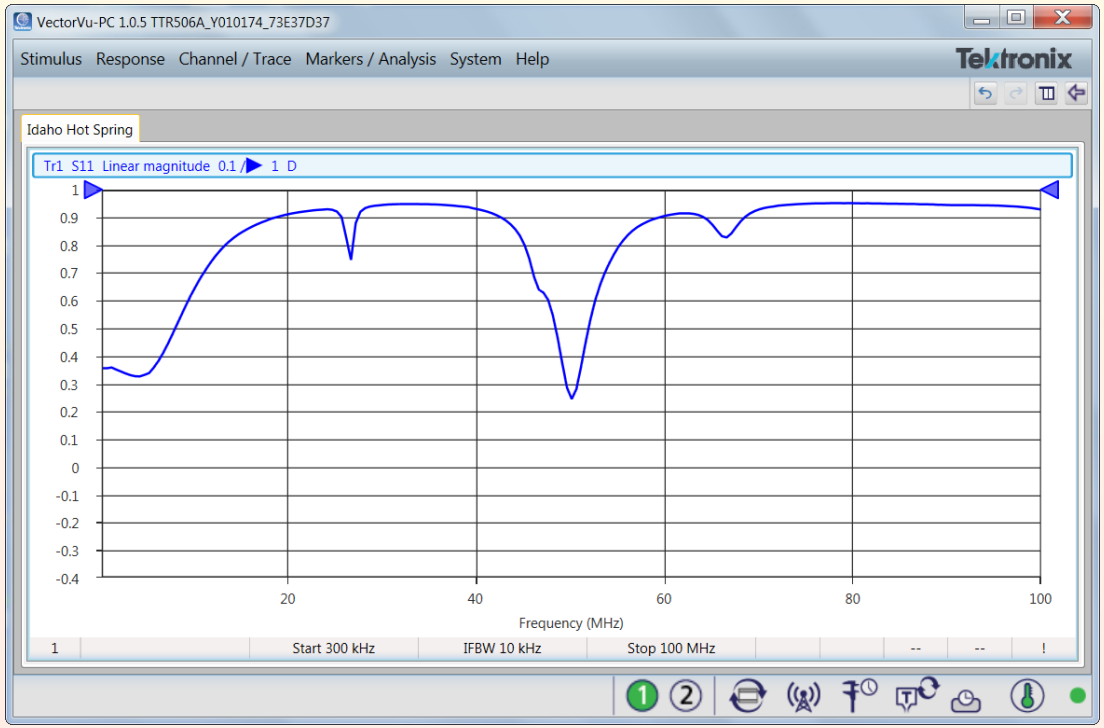


Tektronix Vector Network Analyzer

Idaho Spring Water



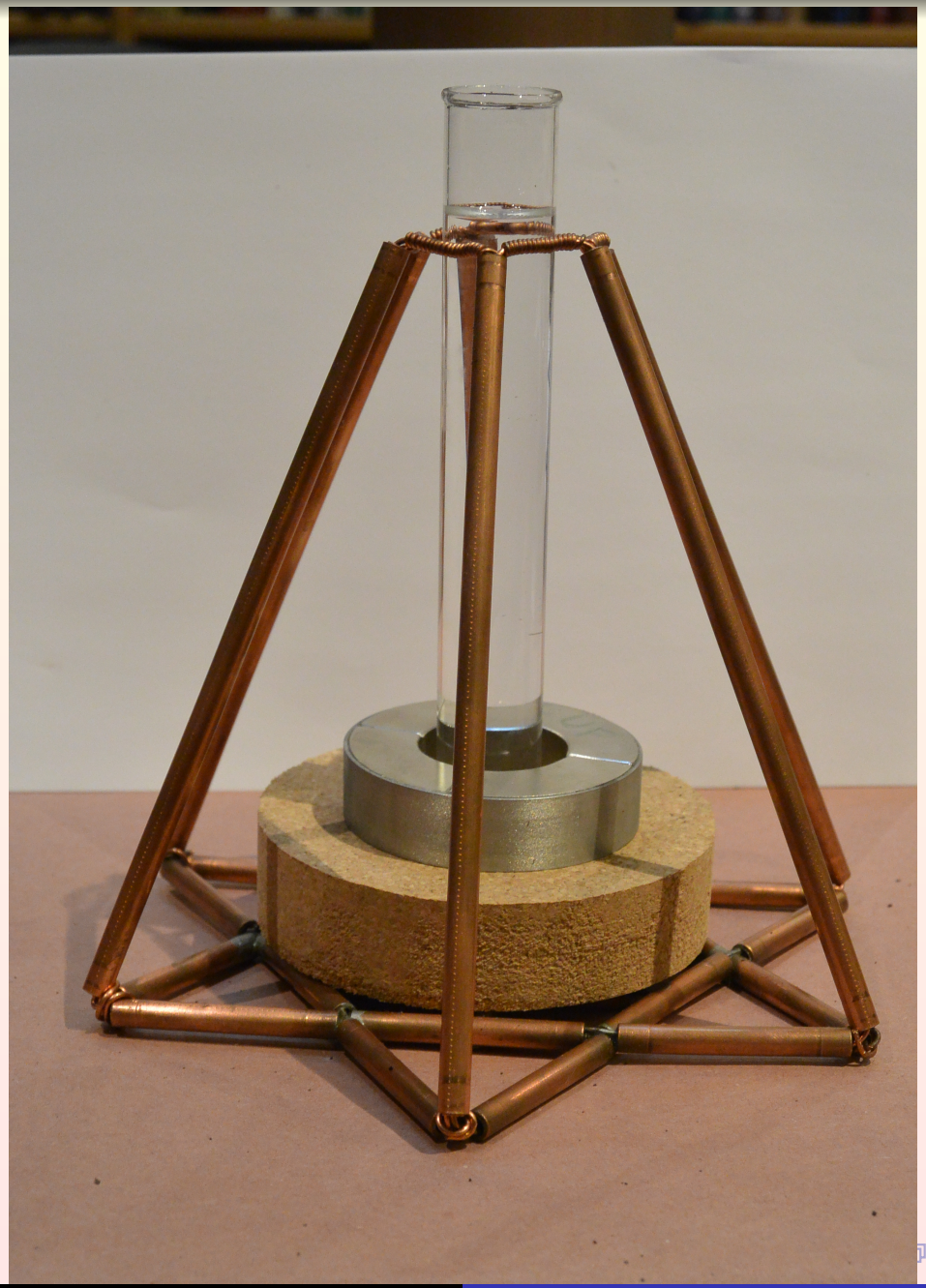
Idaho Spring Vector Magnetic Potential Pointing Down



Protocols

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

Future Conscious Intent Experiment



Experiment Preparation Meditation

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:

Experiment Preparation Meditation

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.

Experiment Preparation Meditation

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.

Experiment Preparation Meditation

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.

0

Physicalness is in unity.
Consciousness is in unity.

1

Consciousness is full.
Physicalness is empty.

2

Everything has its physicalness.
But its physicalness is not its consciousness.

Everything has consciousness.
But its consciousness is not its physicalness.

3

Consciousness cannot be caused by physicalness.
But physicalness can be a manifestation of consciousness.

Consciousness cannot be explained by physicalness.
But physicalness can be explained by consciousness.

Physicalness is matter and movement.
Consciousness is neither matter nor movement.

4

Physicalness has matter properties.
Consciousness does not have matter properties.

Physicalness can be reduced, broken apart and analyzed.
Consciousness cannot be reduced.

Physicalness is explainable.
Consciousness is not explainable.

Physicalness is "Isness".
Consciousness is "Being".

5

Physicalness is garment.
Consciousness is body.

Physicalness is body.
Consciousness is mind.

Physicalness is mind.
Consciousness is heart.

Physicalness is heart.
Consciousness is soul.

Physicalness is soul.
Consciousness is God.

6

Physicalness conceals consciousness
Consciousness reveals through physicalness.

Physicalness is a container for consciousness.
Consciousness has no container.

Physical has place and is always somewhere.
And being somewhere is separated.

Consciousness has no place.
And having no place, consciousness is everywhere.

Physicalness is local.
Consciousness is non-local.

Physicalness is observed.
Consciousness is experienced.

7

Physicalness is in existence.
Consciousness is beyond existence.

Physicalness has form.
Consciousness has no form.

Physicalness has boundary.
Consciousness has no boundaries.

Physicalness has place.
Consciousness has no place.

Physicalness is temporal.
Consciousness is eternal.

Physicalness is in motion.
Consciousness is motionless.

Physicalness is object.
Consciousness is process.

8

Physicalness is seen.
Consciousness is not seen.

Physicalness is heard.
Consciousness is silent.

Physicalness can be touched.
Consciousness is untouchable.

Physicalness can be tasted.
Consciousness is untasteable.

Physicalness can be smelled.
Consciousness is not smellable.

Physicalness is sensible.
Consciousness is unsensible.

Consciousness can grasp physicalness.
Physicalness cannot grasp consciousness.

Physicalness can be thought.
Consciousness is not thinkable.

9

Physicalness is transitory and changeable.
Consciousness is permanent and changeless

Physicalness is sensed and outer observed.
Consciousness is experienced and inner grasped.

Physicalness is compound.
Consciousness is simple.

Physicalness is descended consciousness.
Consciousness is ascended physicalness.

Physicalness is what receives.
Consciousness is what gives.

Physicalness is matter.
Consciousness is spirit.

Physicalness is finite.
Consciousness is infinite.

Physicalness is manifest.
Consciousness is transcendant.

Physicalness is the Many.
Consciousness is the One.

10

Unite the Many with the One.