ISSN 2347-3487
Volume 11 Number 10
Journal of Advances in Physics

Detection of Transient 1.42 GHz (Hydrogen Line) Bursts From the Human Brain-Body During Specific Angular Velocities

Stanley A. Koren and Michael A. Persinger
Laurentian University, Sudbury, Ontario, Canada P3E 2C6
mpersinger@laurentian.ca; SKoren@laurentian.ca

ABSTRACT

Basic physical principles should be reflected at the macro- and micro-levels. The 1.42 GHz neutral hydrogen line is a primary signature of the universe but has also been measured over large bodies of water. Pursuant to our calculations indicating that the human brain contained sufficient proton-electron pairs to be conducive to photon flux densities of ~10^{-13} to 10^{-11} W·m^{-2} for this phenomenon, we designed an experiment to measure the 1.42 GHz emission. When human subjects who were sitting within a very shielded chamber moved towards and away at angular velocities of about 4 m per s to within 21 cm of a sensitive Yagi antenna-sensor system connected to a RF field strength analyzer highly reliable discrete (~250 ms) bursts were detected for the hydrogen line. Static positions near the antenna did not produce this configuration. Quantification indicated that angular momentum of each electron within the peripheral extent of the moment of inertia of the moving mass (the subject's head) multiplied by the hydrogen line frequency would have been equivalent to ~10^{-12} W·m^{-2}. If this universal frequency is generated by specific angular momentum of the human head with respect to the coccyx (fulcrum), then the potential interaction between cerebral electromagnetic phenomena and more universal energies might be re-evaluated.

Indexing terms/Keywords

Hydrogen line, 1.42 GHz, human source, angular velocity, Yagi antenna

Academic Discipline And Sub-Disciplines

Biophysics, Signal Detection, Physical Cosmology

SUBJECT CLASSIFICATION

Biophysics; Hydrogen line; Human Signals

TYPE (METHOD/APPROACH)

Quantitative Analyses; Convergent Operations

INTRODUCTION

Hydrogen constitutes about 90% of the mass of the universe. The neutral hydrogen line (1.42 GHz, 21.1 cm) discerned within spectrometry constitutes one of the most pervasive phenomenon. It is associated with the reversed rotation of the spin of the single electron around the proton and occurs approximately once every 10^7 years. Traditionally, detection of this hydrogen signal has focused upon large areas of intra- and inter-galactic space in order to obtain sufficient numbers of molecules that would facilitate the detection of a signal. Recently the hydrogen line has been measured from bodies of water [1] and along potentially recondite tectonic fault lines exhibiting imminent strain.

Because the human body and brain are composed of approximately 70% or more of water by weight we examined the possibility that the 1.42 GHz output could be discerned. The human brain, for example, weighs about 1.35±0.18 kg [2]. Given each proton is $1.67 \cdot 10^{-27}$ kg, there would be ~10^{27} kg of these mass units each with a functional electron in order to maintain charge parity (neutrality). If a cerebral source of the 1.42 GHz burst was due to the flip of the electron axis once every $3.15 \cdot 10^{14}$ s (10 million years) then within one second within the brain volume with this mass there would be ~$0.3 \cdot 10^{13}$ discrete signals per s from that volume.

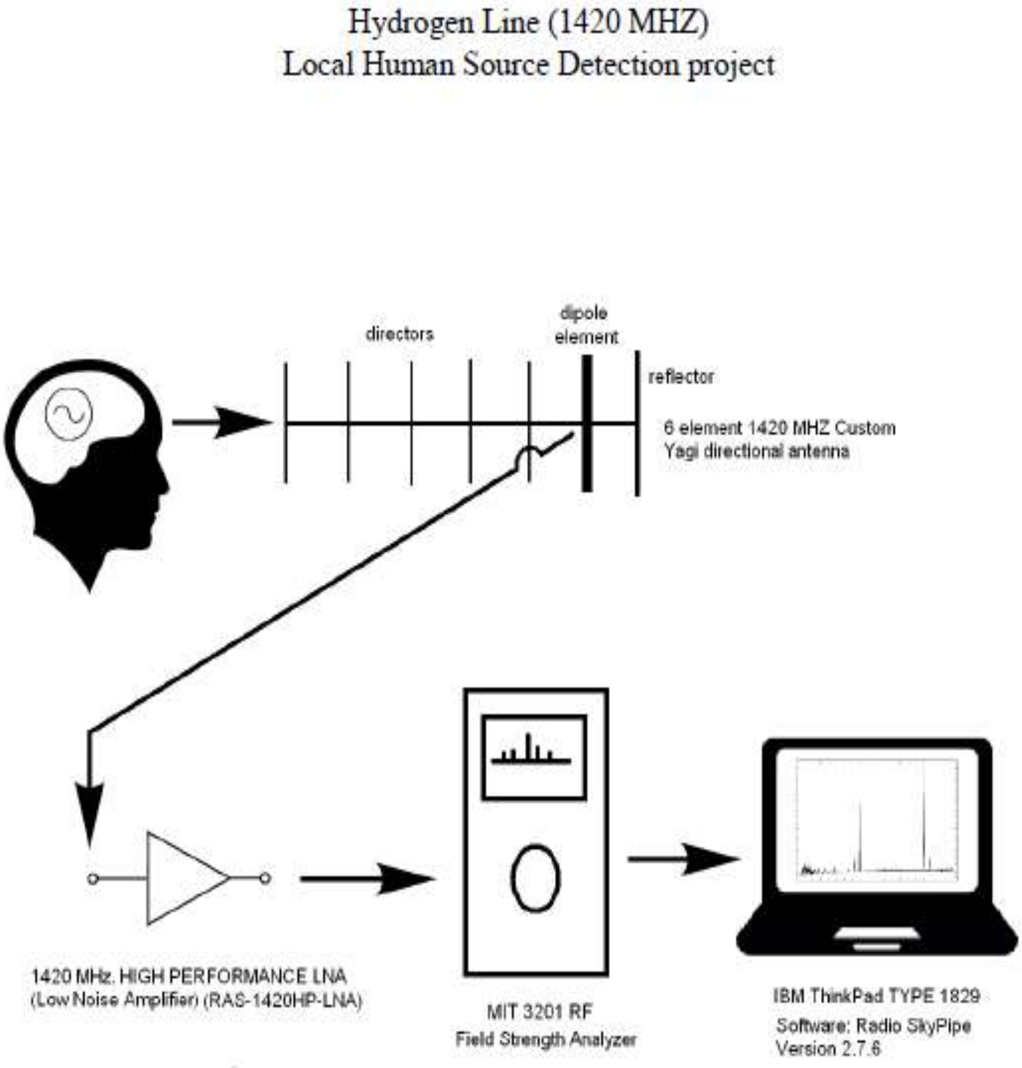
The hydrogen line frequency is equivalent to $9.4 \cdot 10^{-25}$ J ($1.42 \cdot 10^9$ s^{-1} multiplied by Planck's constant $6.626 \cdot 10^{-34}$ J·s). Consequently within the volume of the human brain there would be the potential for $2.6 \cdot 10^{-12}$ J per s (Watts). Assuming the surface area of the cerebrum, accommodated for its topological properties coupled to gyri and sulci, the surface area is ~$1.8 \cdot 10^{-1}$ m^{-2} [2]. Hence the potential power density would be ~10^{-13} W·m^{-2} or the median flux density of cosmic rays at the ground surface [3]. If the entire skull covered with muscle and containing the brain were accommodated the value would be within the range of 10^{-12} to 10^{-11} W·m^{-2}. This is the magnitude of the photon flux density measured at 15 cm along the right side of the skull in the temporal plane when living people engage in imaginative cognitive processes [4].

The direct measurement or strong inference of the 1.42 GHz signal from the human head would have significant implication for biophysical bases of complex brain functions [5-6] as well as the relationship between brain matter and other matter-energy relationships within the universe [7]. For example the diffusivity tensor that equates 10^{-12} W·m^{-2} and the universal energy 10^{-20} J [8] requires the wave impedance (376.73 Ω) to be applied over the hydrogen wavelength and then divided by the magnetic permeability of a vacuum [9]. We have examined the scientific literature and have found no conspicuous references to this problem. Consequently we designed an experiment to discern under what conditions the hydrogen line power frequency might be measured from the presence of a human being near a very sensitive antennadetector system within a radio-quiet environment. Here we present evidence that the angular movement towards or away from the 1.42 GHz system may create conditions that allow reliable discernment.

METHODS AND MATERIALS

The system (Figure 1) was composed of a custom-designed and built 6 element Yagi directional antenna (Figure 2) resonant at 1420.4 Megahertz with 12 dBd forward gain and an impedance of 50 ohms. This particular design was based on the practicality of attempting to measure as yet not verified localized sources. A previous design using 22 elements at a length of 1.5 meters proved far too physically large to be applied in our electrically shielded chamber. The signal from the antenna was coupled via standard N-connector coaxial cables from the center fed dipole element to a Radio Astronomy Supplies 1420 MHz high performance LNA (low noise amplifier) model RAS-1420HP-LNA.

This signal was then coupled to a MIT model 3201 RF Field Strength Analyzer (Figure 3) tuned to 1420.405 MHz. Note this is the nearest frequency to the hydrogen line on this receiver. The reception mode was set to AM (Amplitude Modulation). The audio output was then fed into a IBM ThinkPad TYPE 1829 running a standard OS platform Microsoft Windows XP Professional Version 2002 Service Pack 3. The data were then logged using the standard Software package Radio SkyPipe Version 2.7.6 www.radiosky.com. Sample rates were 10 per s.



More specific information for the various components of the system is described at: http://fieldcomponents.com/. This addresses for various components are: FC13M-FC11M-8 http://fieldcomponents.com/FC13M-FC11M-8.html, BNCM-RG8-NM-Length http://fieldcomponents.com/BNCM-RG8-NM-Length.html length = 8 feet, FC13M- FC22M, http://fieldcomponents.com/FC13M-FC22M-2.html, UHFM-RG174-NM-Length http://fieldcomponents.com/UHFM-RG174-NM-Length.html. The sensor unit was a 6 element 1420 MHZ custom-constructed (by the first author) Yagi directional antenna. Details had been obtained from Javascript Electronic Notebook VHF/UHF Yagi Antenna Quick Designer by Martin E. Meserve http://www.k7mem.com/Electronic_Notebook/antennas/yagi_vhf_quick.html.\

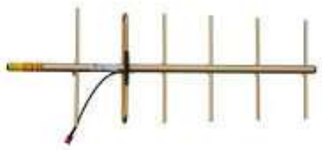


Figure 2. The antenna was connected to a MIT 3201 RF Field Strength Analyzer. 1420 MHz. HIGH PERFORMANCE LNA (RAS-1420HP-LNA

Figure 3. Picture of MIT model 3201 RF field strength analyzer tuned to 1.420405 GHz.

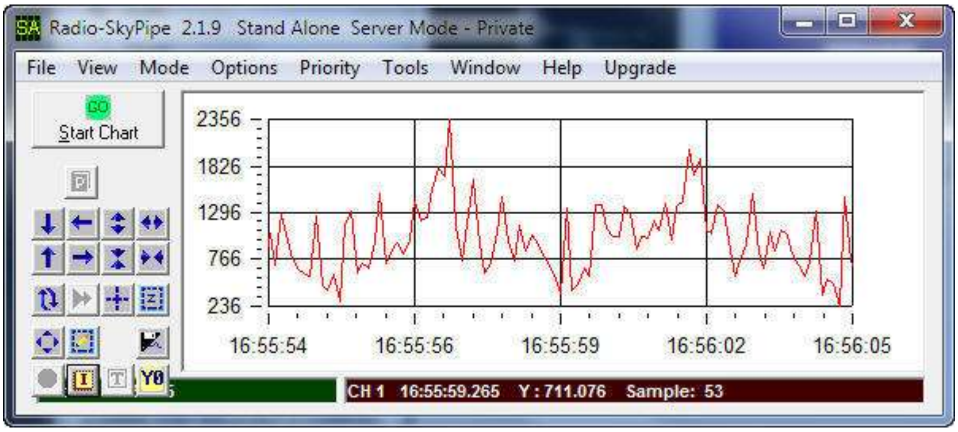


Figure 4. Sample display of screen display for detection of 1.42 GHz amplitude. Vertical axis is magnitude in relative "decibel" units and the horizontal axis is the time (UTC) in hour:min:sec.

Each subject sat in a comfortable arm chair that was housed within a double (metal) wall industrial acoustic chamber (13 m^3) that was also a Faraday cage. Three male university volunteers (21 to 25 years of age) were measured over a three week period (1 subject per week). The Yagi antenna with its major axis parallel to the floor was placed behind the chair on a cart so that the external component would be within 21 ±2 cm of the person when he was sitting straight within the chair. All measurements on the laptop were taken outside of the chamber when both doors of the chamber were closed. The only person near the antenna was the subject. There were no conspicuous, reliable changes in the amplitude discerned at 1.42045 GHz when the subject sat still.

However some but not all movements were associated with enhanced signals. To establish that specific movement was required to enhance the signal each subject was given the following instructions. After he was sitting in the comfortable chair and the double doors were closed, he was to move from an initial torso-horizontal position to an upright position and remain there for 30 s. He would then move back to the original position and remain there for 30 s. They were instructed to continue this until the external doors were opened. The procedure is depicted in Figure 5. Considering the unknown sources of signal that could occur, we reasoned that this fixed and known interval would be clearly evident if any reliable signal enhancement was to be detected.

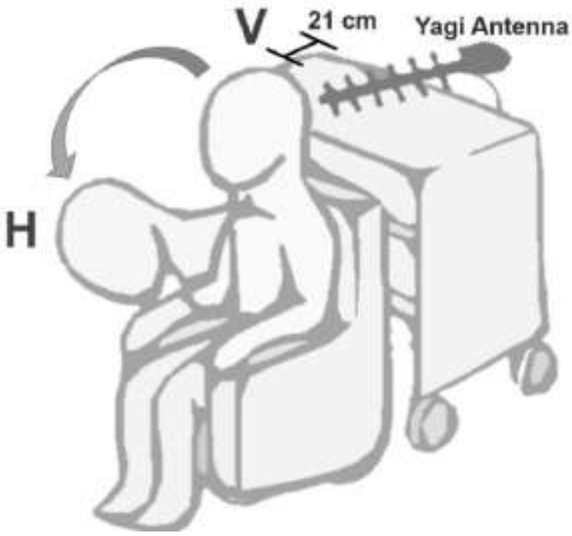


Figure 5. Depiction of the procedure for the subject that produced the transients in the 1.42 GHz band when moving from the horizontal (H, bent) to vertical (V) position at ~4 m per s to within about 21 cm of the Yagi antenna.

RESULTS

Figure 6 indicates a very noisy RF environment outside of the chamber. The location was in the vicinity of a WIFI access point in a University Campus office building that is frequented by cell phone, tablets, and laptop computers. It is provided to illustrate the fact that the above receiver system was detecting wide band RF noise (even when set to 1.42 GHz) especially when compared to the highly electrically insulated chamber where tests were being conducted. (data filename UT160406000001.spd) Within the chamber room (but outside of the acoustic chamber) we discerned multiple relatively high intensity signals that were later identified to originate from students activating and deactivating laptop computers while sitting in the classroom one floor above the chamber room.

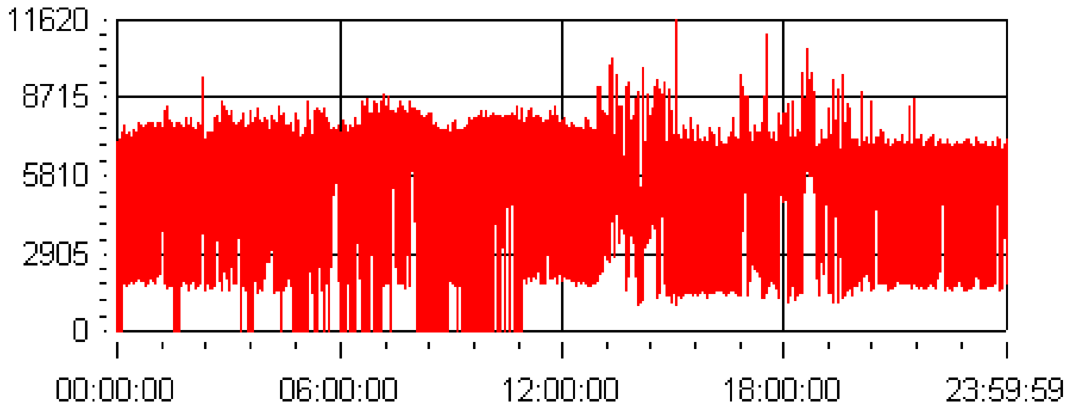


Figure 6. Sample of relative amplitude of the background hydrogen line in decibel like units (vertical axis) as a function of time (UTC) over a 24 hr period in the first author's office. Note the wide band of amplitude.

On the other hand when the system was maintained within a double-wall industrial acoustic chamber with both doors tightly closed and sealed, the baseline values were markedly reduced as shown in Figure 7. It shows the baseline within the quiet electrically isolated chamber. (data filename UT160324212016_chamber_05.spd).

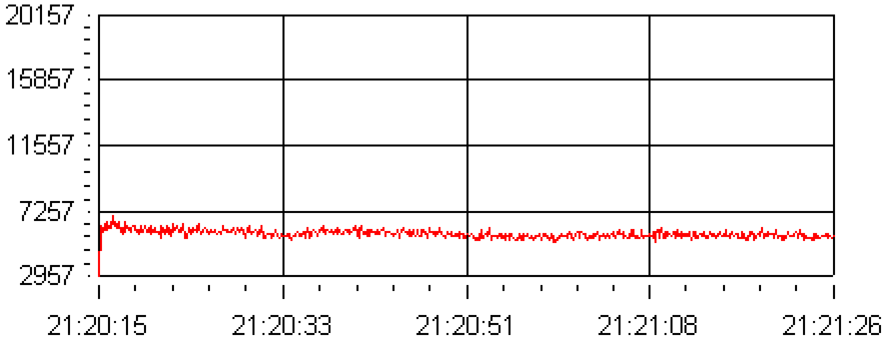


Figure 7. The same (relative) power units of background hydrogen line frequency (vertical axis) as a function of UTC time (hr:min:sec) within the acoustic shielded chamber with no human beings present.

When the head of the subject was positioned within ~21 cm of the antenna there were no conspicuous changes in the signal. However *movement* of the person around his axis from the face on knees to a perpendicular position when the head was within 21 cm of the end of the antenna produced conspicuous effects as shown in Figure 8. Signal detected during the movement of the head (data filename UT160324205607_chamber_01.spd) was associated with brisk transient enhancements within the band of the hydrogen line. The time between the pulses was a function of the shift from horizontal to vertical position (with the head near the Yagi antenna) once ever 30 s by the subject. Expansion of the time scale empirically demonstrated the width of each of these two clusters was about 6 s. The duration of each of the two peaks (spikes) was about 250 ms.

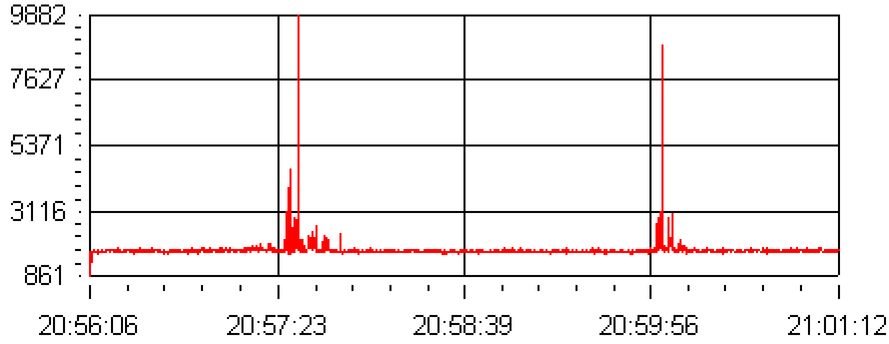


Figure 8. Hydrogen line power density (relative units) along the vertical axis as a function of UTC time (hour:min:sec) for a human subject moving from a stable position to within 21 cm of the distal portion of the antenna once every 30 s.

A photographic (snapshot) of the computer screen in real time for one subject that shows the transient 1.42 GHz peaks from the angular movements once ever 30 s as well as contributions from closing and opening the double doors of the acoustic chamber can be seen in Figure 9. Although not optimally aesthetic the presentation reveals the nature of the background (unknown and other signal representations) within which the experimental induction from the angular movement of the subject is clearly seen starting at 21:57:11 after the chamber doors were closed. The person moved his head towards the antenna or away from the antenna once every ~30 s. These intervals were estimated times based upon the self-counting of the subject. There were a total of five movements. The perturbations before and after were related to closing and opening the double doors. Similar results were obtained with two other subjects each tested one week apart.

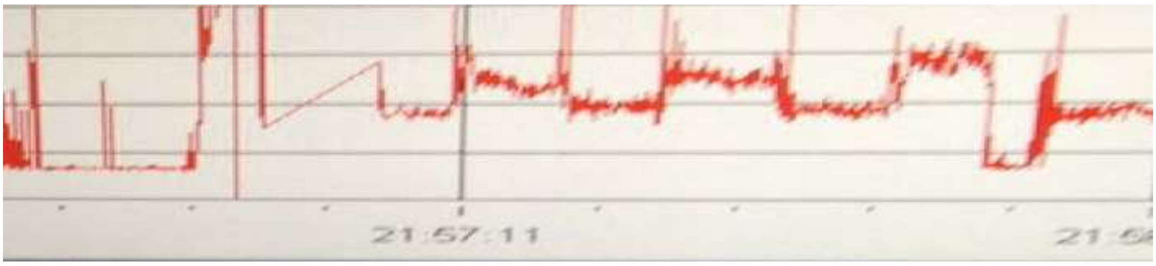


Figure 9. Screen shot of the transient increases in the 1.42 GHz signal produced by the motion (5 displacements) noted in Figure 5 when the subject was enclosed in the acoustic chamber (at 21.57.11) and began to move towards and away from the 21 cm distance near the Yagi antenna once every 30 s. In addition to the transients note the maintained elevation of hydrogen line signal when the person's head was within the zone of the antenna

(V in Figure 5) and the maintained decrease when the person was in the horizontal (H) position. The perturbations before and afterwards were associated with closing or opening the double doors of the chamber.

Fortuitously during one of our experiments there were three solar bursts measured at 0.245 GHz (245 MHz) by NOAA (SWPC.Products@noaa.gov). Their signatures were clearly evident with relatively slow rise times and decay times. Because the value of the flares were known by the NOAA data recording, estimated the power density of the scaling of the 1.42 GHz that we detected. What we interpret as a 1.42 GHz enhancement during the 0.245 GHz detection at terrestrial stations increased by about 6,000 relative units. The estimated power densities at their peaks were between 100 to 200 sfu (solar flux units). Because each unit is 10^{-23} $W{\cdot}m^{-2}Hz^{-1}$ then the result would be 1 to $2{\cdot}10^{-21}$ $W{\cdot}m^{-2}Hz^{-1}$. When multiplied by $1.42{\cdot}10^{9}$ Hz, the flux density would be between 1 and $2{\cdot}10^{-12}$ $W{\cdot}m^{-2}$. This assumes minimum attenuation within the chamber and also suggests that despite the factor of 5.8 discrepancies in peak frequency some energy from the solar radio emissions were distributed across the narrow band we were measuring. We realize that because the gain of the receiver was adjusted to the location the scales for the graphs are arbitrary despite our estimates. In other words the information content of the signal was reflected rather than the “signal strength”.

DISCUSSION

. To our knowledge this is the first demonstration that an electromagnetic frequency that traverses the universal hydrogen line is measurable from a human body, most likely the skull and cerebrum, when the environment is relatively radio quiet. The major effect was not related to static positioning of the head near the antenna even when it was within 21 cm of the distal end of the yagi antenna. Inspections of the graphs indicated there may have been small tonic shifts in the relative power measures when the person was in the closed chamber compared to baseline conditions and his head was proximal vs distal to the antenna. However by far the most reliable and conspicuous effect was the production of significant spikes within the narrow band (1.42 GHz) of the sensor when the subjects moved around the axis of the coccyx at a velocity that would be equivalent to 3 to 4 m per s. This suggests that angular momentum may be an important parameter to manifest the energy associated with the universal hydrogen line. Because of the polarization of the antenna (placed horizontally) the corresponding successive incremental horizontal polarized signals from the subject’s movement might have been integrated as an influx of signals within the sampling bins, thus increasing the detection.

The concept that every unit of the universe is influenced by the whole universe and visa versa is the central theme of Mach’s Principle of the Immanence of the Universe [10]. He assumed this intrinsic and permeating influence was coupled to angular momentum. The moment of inertia of a single electron with a mass of $9.11{\cdot}10^{-31}$ kg multiplied by the square of the distance between the center and extent of that mass $(2.8{\cdot}10^{-15}\ m)^2$ would be extremely small: $7.1{\cdot}10^{-62}$ $kg{\cdot}m^2$. If Mach’s principle is valid, then some angular velocity to produce the angular momentum with the capacity to permeate the universe based upon universal parameters [11] that define it, such as G (Newton’s Gravitational Constant), the mass (M), the age or duration (T), and the diameter (L) of the universe, should be involved.

If the principle were applicable to the results we measured here the insertion of these parameters that could contribute to the dispersion of the hydrogen line should solve for the flux power density. Using several approaches we [12] have found that this value is ~$2.4{\cdot}10^{23}$ $m{\cdot}s^{-1}$. This coefficient changes slightly depending upon approaches; the order of magnitude remains the same. Angular velocity would be this value divided by the radius of an electron. The resultant value is $6.25{\cdot}10^{-22}$ $kg{\cdot}m^2{\cdot}s^{-1}$. When multiplied by the hydrogen frequency ($1.42{\cdot}10^{9}$ s^{-1}) the energy is $8.9{\cdot}10^{-13}$ J. We estimate that 2 s was required to move between the two positions of facing the knees to upright position. The power density would be ~$4.4{\cdot}10^{-13}$ W. Cross sectional areas of either the cerebrum or the median body for our subjects would result in the equivalence of 10^{-12} $W{\cdot}m^{-2}$. This is within the range of the enhanced emissions of photons when people engage in specific cognitive processes such as imagination [4].

The duration of the peak of the 1.42 GHz transients was ~250 ms. Assuming that the distance traversed between the two positions occupied by each subject was about 1 m this would be equivalent to 4 $m{\cdot}s^{-1}$. Our estimates indicate the likely range would have been 3 and 4 $m{\cdot}s^{-1}$. This value is within the range of the bulk velocity of rostral-caudal intracerebral electromagnetic processes [13] that are recreated within the cerebral cortices ever approximately 25 ms. They are presumably the physical substrate for the ubiquitous 40 Hz integrated patterns measured over large areas of the human cerebral cortical manifold [14] that are attributed to human consciousness. Assuming the functional length of the rostral-caudal axis of the human brain this would be equivalent to about 4 $m{\cdot}s^{-1}$. The concurrence does not prove but clearly suggests that the electrodynamic features [15] of spatially integrated fields that are associated with consciousness may also have the capacity to interface with and to briefly generate characteristics of the hydrogen line. Human movements that optimally approximate the angular velocities and distances we measured here might facilitate this interface with the universal hydrogen line.

CONCLUSIONS

Once measured almost exclusively in large space the ubiquitous 1.42 GHz hydrogen line has been detected over terrestrial water. The potential transient emissions of this universal frequency from the human body and brain could be very significant for the interface between these functions, including the units of cognition coupled to action potentials (~10^{-20} J per action potential) of neurons, and transmission of information over larges distances as either local or non-local processes. The detection of human enhancements of 1.42 GHz transients within a radio-quiet area requires angular velocities of about 3 to 4 m per to and from the receiver. The angular momentum of an each electron when multiplied by the hydrogen line frequency would result in flux densities that are in the same order of magnitude as the measured photon emissions emitted during cerebral function.

ACKNOWLEDGEMENTS

We thank Dr. Rod O'Connor for his generous donation of the MIT model 3201 RF field strength analyzer. Special thanks to Professor Nicolas Rouleau for the drawing. Special thanks to Dr. Linda S. St-Pierre, Chief Steward, Laurentian University Faculty Association, for defending our Academic Freedom and our right to pursue the unknown.

REFERENCES

I. https://earth.esa.int/web/guest/missions/esa-operational-eo-missions/smos

II. Pakkenberg, B. and Gundersen, H. J. G. 1997. Neocortical neuron number in humans: effect of sex and age. The Journal of Comparative Neurology, 384, 312-320.

III. Konig H. L., Krueger, A. P., Lang, S. and Soenning, W. 1981. Biological effects of environmental electromagnetism. Springer, Berlin.

IV. Dotta B. T., Saroka, K. S. and Persinger, M. A. 2012. Increased photon emission from the head while imagining light in the dark is correlated with changes in electroencephalographic power: Support for Bokkon's biophoton hypothesis. Neuroscience Letters, 513, 151-154.

V. Burke, R. C. and Persinger, M. A. 2013. Convergent quantitative solutions indicating the human hippocampus as a singularity and access to cosmological consciousness. NeuroQuantology, 11, 1-7.

VI. Scott, M. A. and Persinger, M A. 2013. Quantitative convergence for cerebral processing of information within the geomagnetic environment. Journal of Signal and Information Processing, 4, 272-287.

VII. Persinger, M. A., Koren, S. A. and Lafreniere, G. F. 2008. A neuroquantologic approach to how human thought might affect the universe. NeuroQuantology, 6, 262-271.

VIII. Persinger, M. A. 2015. Thixotropic phenomena in water: quantitative indicators of Casimir-magnetic transformations from vacuum oscillations (virtual particles). Entropy 17, 6200-6212.

IX. Persinger, M. A. 2015. The prevalence and significance of $\sim 10^{-20}$ J and $\sim 10^{-12}$ $W \cdot m^{-2}$ as convergent/divergent nodal units in the universe. International Letters of Chemistry, Physics and Astronomy, 61, 94-100.

X. Mach, E. 1919. The science of mechanics. The Open Court Publishing Co., Chicago.

XI. Persinger, M. A. and Koren, S. A. 2013. Dimensional analyses of geometric products and the boundary conditions of the universe: implications for a quantitative value for the latency to display entanglement. The Open Astronomy Journal, 6, 10-13.

XII. Persinger, M. A. and Koren, S. A. 2015. Potential role of the entanglement velocity of 10^{23} $m \cdot s^{-1}$ to accommodate recent measurements of large scale structures of the universe. International Letters of Chemistry, Physics and Astronomy, 3, 106-112.

XIII. Nunez, P. L. and Cutillo, B. A. 1997. Neocortical dynamics and human EEG. Oxford University Press, Oxford.

XIV. Llinas, R. and Ribaru, U. 1993. Coherent 40 Hz oscillation characterizes dream state in humans. Proceedings of the National Academy of Sciences USA 90, 2078-2081.

XV. Ravitz, L. J. 1959. Applications of electrodynamic field theory in biology, medicine and hypnosis. American Journal of Clinical Hypnosis. 1(4), 135-150.

Authors' biographies with photographs

Stanley A. Koren is the creator of the Digital-to-Analogue (DAC) optocoulpler technology for complex magnetic field circuits and the Complex software that operates the systems. He has published extensively in the areas of physical cosmology, electronic systems analyses, and application technologies. He is trained as an Electronics Engineering Technologist and holds a degree in Mathematics and Computer Science. Professor Koren and Dr. Persinger, while at Laurentian University, have collaborated on multiple projects over the last 30 years that included the creation and disruptions of excess correlations in physical and biological systems. They developed a neurophysics model that relates the nature of the proton and electron to cosmological variables such as the Hubble parameter and their connection to the physical substrates of living matter. His favorite focus is discerning the relationship between time, Casimir phenomena, and the intrinsic nature of the neutral hydrogen line. Professor Koren has been systematically pursuing the application of quantum theory beyond the single particle. He holds a number of patents with Dr. Persinger and is a licensed radio amateur: Canadian call sign VE3PSE.

Michael A. Persinger, Ph.D. is a Full Professor at Laurentian University in Sudbury, Ontario, Canada. He is affiliated with a number of different programs including Biomolecular Sciences, Behavioural Neuroscience and Human Studies as well as the Quantum Molecular Biology Laboratory where he is examining the relationship between 10^{-20} J events within the brain and complex functions. Dr. Persinger and his colleagues have experimentally demonstrated the validity of Cosic's Molecular Resonance Recognition Model, Bokkon's Cerebral Photon Field Hypothesis and the efficacy of proton driving patterned magnetic fields that inhibit the growth of cancer cells but not normal cells. He is an interdisciplinary scientist whose primary goal is to integrate the physical sciences, social sciences and humanities according to their fundamental operations. Within the last 50 years he has published more than 500 technical articles in a variety of areas that range from Astronomy to Zoology. His present experiments are focused upon understanding the relationship between the structure of space and distribution of energy, the shared dimensional equivalence of quantized gravitational and electromagnetic fields, and the empirical demonstration of an intrinsic entanglement velocity.