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Innovative technical implementation of the Schumann resonances and its influence on organisms and biological cells

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Abstract. Over the course of time in the digital age, oscillating processes were utilized in various realizations. Life without these became hardly imaginable. Schumann resonances are electromagnetic resonances or eigenfrequencies (radio waves), which originate from the oscillation in a hollow space shell. Their average basic frequency is 7,83Hz. The above-mentioned radio waves emerge from energy discharges such as thunderstorms, lightning or solar wind within the earth's surface and the ionosphere. They exist around the globe. Various scientists have discovered a correlation to our health on the basis of studies and experiments; their absence can result in a variety of disorders from headaches to cancerous diseases. Nevertheless, the field is considered controversial. It has not yet been researched thoroughly, which significant impact it has on beings. This shows that further research is appropriated. The objective is an analytical consideration of the impact of a technical application of the Schumann resonance on living organisms. Furthermore, this paper is concerned with the consideration and comparison of various hypotheses and studies. The here mentioned frequency range also covers brainwaves, there should be a direct influence on certain brain areas. Furthermore, the investigations shall function as the basis for further experiments at Johannes Gutenberg University, Germany.

1. Introduction

The German professor of physics Winfried Otto Schumann from the Technical University in Munich together with his successor Herbert L. Koenig proved the existence of the earth frequency with a value of 7,83 Hertz [1] through experimental investigation in 1960. The Schumann Resonances are electromagnetic resonances or eigenfrequencies, which emerge through oscillations in a cavity shell. The cavity (also resonant cavity) is limited through the earth's surface and the ionosphere (in roughly 100km height) [2] and can be prompted through lightning discharges which emerge in the ionosphere. Energy discharges, such as thunderstorm, lightning or solar winds within the earth's surface cause radio waves [3]. These radio waves are responsible for the existence of resonance vibrations and move around the earth. Figure 1 schematically shows the spreading area of the Schumann Resonances. The waves spread between the electroconductive layer of the earth's surface (yellow) and the ionosphere (purple), which roughly begins 100km above the earth's surface. In this area, the air molecules are ionised through solar radiation [4], meaning that at least one electron is removed. Thereby, an electrically conductive field emerges around the earth. The waves are able to circulate the entire earth. Besides the fundamental



wave, there are higher orders, so called overtones; they can also be observed at other frequencies, these would be 7.83, 14.1, 20.3, 26.4, 32.5 [5].

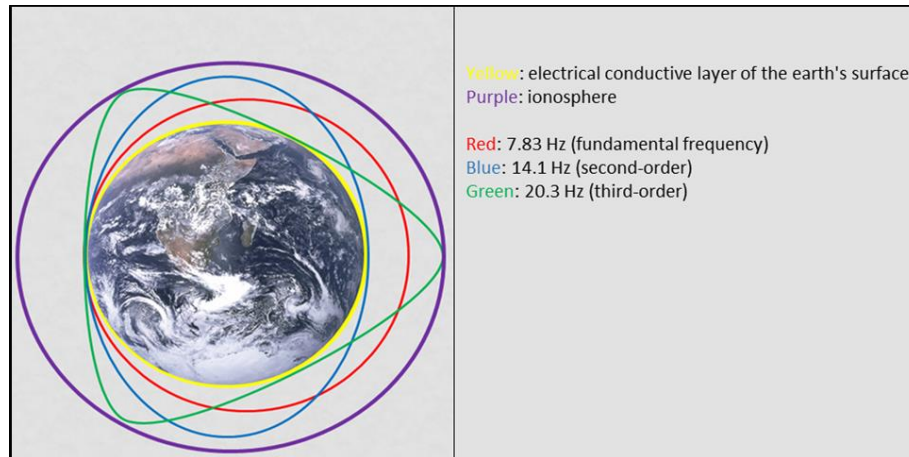


Figure 1. Schumann waves - Spreading Area.

2. The Schumann Resonances Spectrum

The earth resonance, determined by Schumann and Koenig, was tested and confirmed in hindsight by several independent scientists, such as Professor Michael A. Persinger (NASA) [6]. Since the experimentally determined earth frequency, Schumann Resonance has become the scientific term for the earth's frequency, which revolves around the description and measurement of the earth's "pulse" or "Heartbeat" [7]. The earth frequency was first mentioned by George F. Fitzgerald in 1893. Tesla also spoke of this frequency [8], [9]: *"Alpha waves in the human brain are between 6 and 8 hertz. The wave frequency of the human cavity resonates between 6 and 8 hertz. All biological systems operate in the same frequency range. The human brain's alpha waves function in this range and the electrical resonance of the earth is between 6 and 8 hertz. Thus, our entire biological system – the brain and the earth itself – work on the same frequencies. If we can control that resonate system electronically, we can directly control the entire mental system of humankind"*. The following figure 2 reveals the spectrum of the Schumann Resonances. It was compiled by Stanford University California. Measurements were taken at three different locations, SS = Sondre Stromfjord (Greenland), AH = Antarctica, SU = Stanford University [10]. The lines delineated in red are multiples of the base frequency. The harmonics appear sinusoidal between 7,8 - 50 Hz. Peaks are based upon disturbances through the power grid (50 - 60 Hz), the traction current (33 Hz) or the Russian submarine communication system (82 Hz) [11].

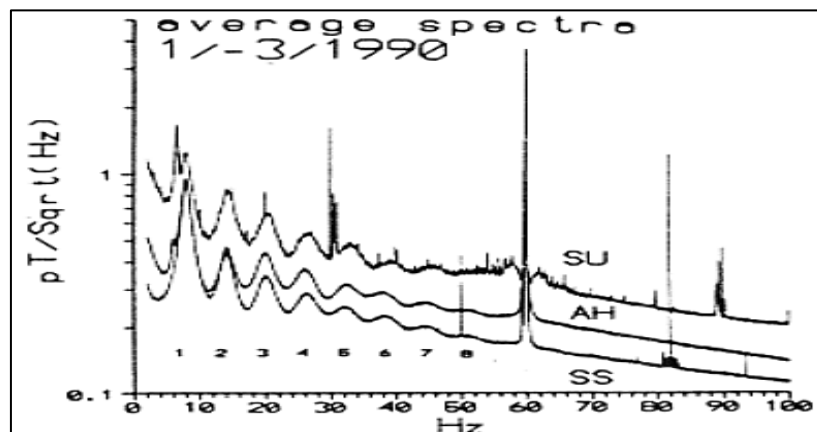


Figure 2. The Schumann Spectrum (Stanford University, California) [10].

3. Scientific connection between frequencies and health

Meanwhile, experiments and scientific investigations prove the coherence between this frequency and the human being [12], [13], [14]. Science is ready to have single organs resonate with this frequency. Neurobiological studies show that the resonance frequency of the hippocampus [15] is 7,83 Hz. NASA was interested in the earth's "heartbeat" from early on.

Professor Persinger and other reputable professors such as Dr. Ludwig declared and considered this frequency as "biological norm". Astronauts who left the ionosphere and re-entered earth suffered from strong physiological conflicts [16]. Persinger recognized the problem and fixed it. He designed little generators, which transmitted the Schumann Resonances, for astronauts to carry with them and protect them [6]. Concerning the earth's magnetic field's impact on the brain, the scientific studies of Caltech [17] show that the human brain exhibits magnetic crystals [18]. These are magnetite Fe_3O_4 [19]. Absorption follows the law of the "classical physics process of resonance matching of frequency". Electromagnetic signals within the brain or of the brainwaves are supported via biochemical systems [20]. The Schumann Resonance affects the melatonin/serotonin balance, resulting in several illnesses such as cancer, heart problems etc. [21]. In addition to Schumann excitation, solar activity and geomagnetic activity (GMA) also interact with the brain [20].

4. Experimental Studies and EEG

According to approx. 120 studies [20], which have been conducted since 2003, a correlation between solar activity or GMA and a homeostatic modulation in humans exists, meaning a negative alteration of the hormonal balance. This also yields, that solar/GMA affects the melatonin balance, which simultaneously alters the signal strength of the Schumann Resonance. This leads to negative consequences regarding human health [20]. Via electroencephalography (EEG) it was proven that the brain generates electromagnetic waves in the low-frequency range. Human brainwaves oscillate particularly within the frequency bands of 1 to 40 Hz, thereby within the orders of the Schumann Resonances [22]. The wavebands of the brain, also called states of consciousness, are arranged in the following four spectra. The following figures are showing the brain wave diagrams [23]:

1. Delta (0,5-3 Hertz): The frequency range with the smallest frequency is characteristic for dreamless deep sleep, trance, comatose conditions.

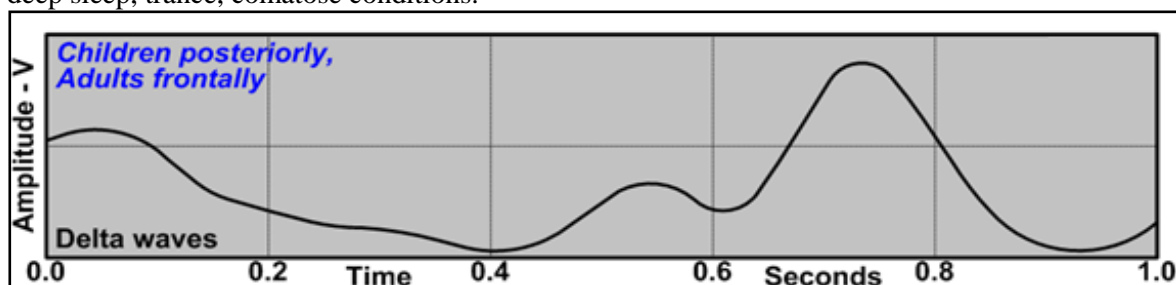


Figure 3. Delta Waves.

2. Theta (4-7 Hertz): This range is characteristic for the dream phase, the unconscious.

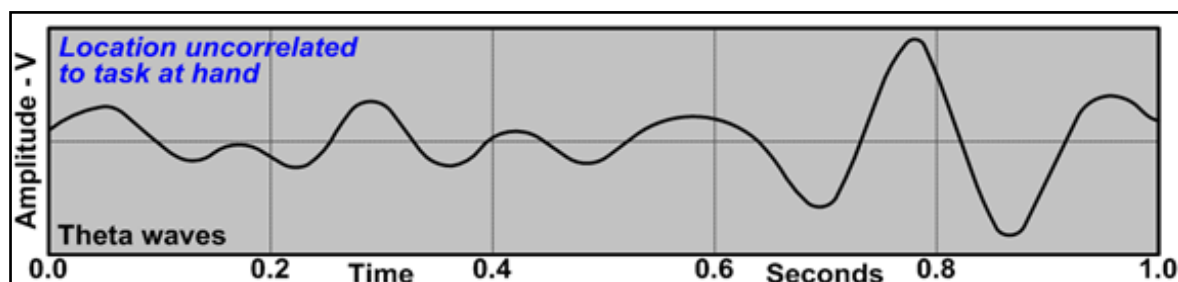


Figure 4. Theta Waves.

3. Alpha (8-14 Hertz): These waves occur in relaxed wakefulness, such as in light meditation or shortly after falling asleep or immediately after waking up.

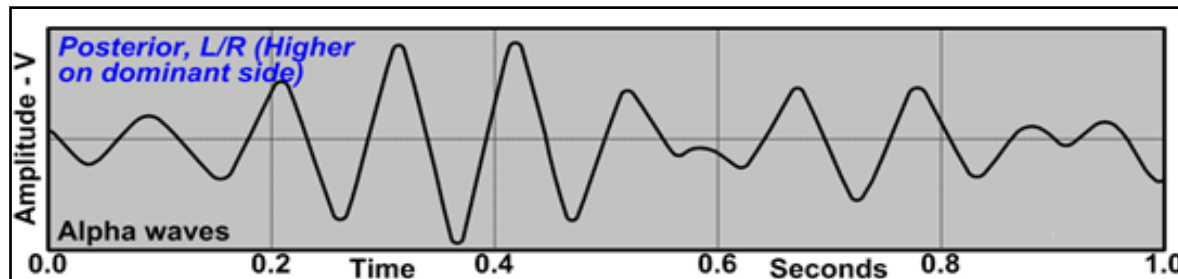


Figure 5. Alpha Waves.

4. Beta (15-38 Hertz): These waves prevail in the normal wakefulness, with concentration, unrest or attention.

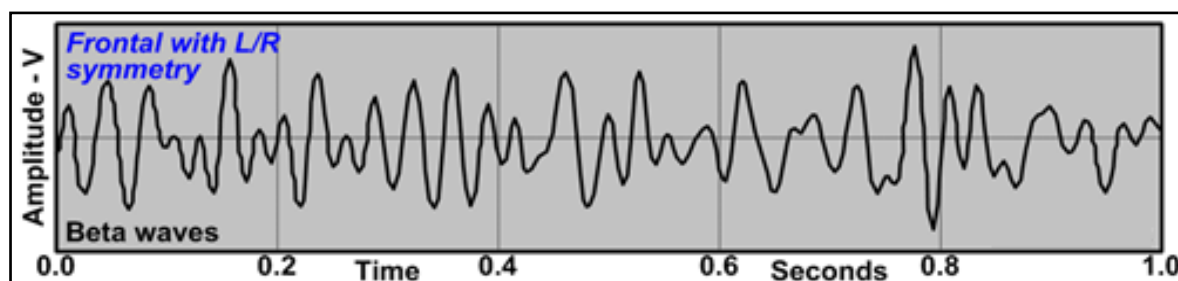


Figure 6. Beta Waves.

5. Direct impact of the Schumann frequency on the brain

By means of the above listed frequencies, the Schumann Resonances are within the area of dream phase and relaxed wakefulness. Certain brain regions such as the hippocampus, the hypothalamus and the pineal gland (epiphysis) come into resonance with the Schumann Resonances as well [24], [25]. The limbic system, which the hippocampus is part of, consists of several structures, which are generally responsible for emotions, learning, digestion or reproduction [26]. The exact function of the Hippocampus is not thoroughly investigated and there are many unanswered questions, but Professor Dietmar Schmitz from the Charité Medical School in Berlin offers the following statement: “A disturbance of the rhythms within the hippocampus can be a possible cause for pathological conditions such as epilepsies, schizophrenias or memory disorders within the framework of Alzheimer’s disease” [27]. The pineal gland is responsible for the production of melatonin and therefore for the management of the sleep hormone. The pineal gland is able to detect electromagnetic fields. Biological implications of the pineal gland in connection to electromagnetic fields are being researched for over 45 years; hereto, several of studies exist [28]. They substantiate the affection of the pineal gland, thus among others the influence of the melatonin balance. The scientist E. Jacobi, University of Duesseldorf (Germany), demonstrated that the absence of Schumann Resonances produced mental and physiological health problems within the human body. [29]. Professor R. Wever of the Max Planck Institute for behavioural physiology in Erling-Andechs (Germany) conducted a study thereto. He had an underground bunker built, which was shielded from magnetic fields completely. He then had volunteering students live in it for several weeks. During this time, he noted that the students suffered from mental stress and migraines. He then reintroduced the Schumann Resonances to their surroundings and the results were incredible. After a short exposure to 7,83 Hz the health of the volunteers stabilised.

This showed a direct relation between human beings and the earth’s “pulse” [14]. This project was corroborated later in 2011 by Luc Montagnier [30]. Several references are shown that the DNA double helix is like an antenna. DNA-sequences communicate with one another via electromagnetic waves [31].

Montagnier initiated a water-DNA-experiment. He removed DNA from water and added electromagnetic waves of 7,83 Hz. During the experiment, new DNA strands were built. Without radiation, no new DNA was built. Therefore, **an explicit connection between Schumann Resonances and the creation of life exists.**

6. Conclusion and Outlook

The correlation between frequencies and health is not a new discovery. As can be seen from this paper, various independent scientists, have been working on this topic. On the basis of experiments and studies, the initial assumed hypothesis was underpinned.

Besides the Schumann frequencies, other frequencies or frequency ranges should have an influence on the well-being of living organisms. However, it was not discussed here further, as it would go beyond the scope of this paper. There are other research reports and investigations, such as studies by Dr. Rife, Dr. Robert Beck, or Prof. Baumgart. A few years ago, a study took place in conjunction with a couple university hospitals of Germany. They were led by renowned doctors such as Prof. Wolfgang Pries. In the frame of this literature research and other fundamental research, own experimental studies on organisms at the Johannes Gutenberg University of Mainz, Germany will be started soon.

For this purpose, a generator was developed, which emits certain frequencies and frequency bands. All frequencies used, including the Schumann frequencies, are reproducible with particular modulations.

In fundamental analogy to the frequencies, which were used in the past by already mentioned scientists, are considered for the already mentioned experiments. The experiments are carried out on crustacea, duckweed, bacteria and others. Further information will follow in due course.

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