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The Physical Time Is Discrete, Periodic In Nature - The Physical Time Has A Shape Too. Information Is A Conserved Force.

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Abstract — *Nature is a language expressing itself. Nature is an encoded form of information and our entire goal is to find easy ways to decode the nature. The paper focuses on the proof why time is discrete and periodic in nature what looks like continuous to us. The physical time also has a shape. It is more like we live in an encoded simulated World / Universe, much like computer simulation; to decode it, you need new inventive information. Psychologically, we need special preparation for that; like a girl becomes mother after marriage but her preparation starts from her young age; her culture, her mentality, her thoughts has achieved a certain level which imbibes into her DNA and gets transmitted to the next generation. A gardener may water the plant daily, but fruits grow only in the season. A great preparation is generally ends up with a great seasoned result because everything is destined to happen at its own time. Information is a conserved force. The nature follows the most efficient physical code possible. Thus, if the nature is code theoretic, she will use the most efficient physical code or a number of set of codes to simulate the World / Universe. It is not necessary to be of philosophical choices, it can be a deductive approach to decode the nature. Emergent information grows exponentially. A non-local neural-network code is more powerful than an otherwise equal neural network because non-locality allows an additional set of connections – the connections across space-time. Everything is connected to everything and all information are contained everywhere; much like for microscopic, it is oscillating and propagating; whereas, for macroscopic, it is rotating and propagating.*

Keyword — Encoded simulated World / Universe, Computer Simulation, DNA, Physical Code, Code Theoretic.

1. Introduction And The Theories

Theory 1: Time is the resultant of force interacting with matter in the space. Time has no meaning without the interaction of force with matter. Time is only an interaction.

Theory 2: The physical time is periodic in nature and has a shape; the periodicity and shape can be deductible with the help of periodicity and shape of electromagnetic radiation.

Theory 3: The physical time is discrete in nature; the discreteness can be deductible with the help of quantum electromagnetic radiation concept or photon.

Theory 4: The Theory of Conservation of Information**:** Information is a conserved force; everything is connected to everything and all information is contained everywhere.

The electromagnetic spectrum is actually a continuum of all electromagnetic waves that are arranged according to frequency and / or wavelength [1, 2]. The astronomical bodies like Sun, Moon, Earth, and other bodies radiate electromagnetic energy of various wavelengths [3, 4]. Electromagnetic energy passes through free space at the speed of light (C) in the form of sinusoidal waves [5, 6]. Electromagnetic waves are typically described by any of the following three physical properties: the frequency (f), wavelength (λ), or photon energy (E) [7, 8].

$$f = \frac{C}{\lambda} = \frac{E}{h}$$

$$Or, E = \frac{hC}{\lambda}$$

Where, C is the speed of light and h is Planck's constant.

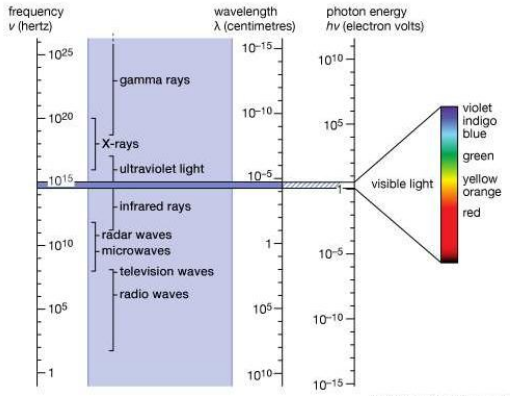

Figure: The Electromagnetic Spectrum: The narrow range of visible light is enlarged at the right.

Electromagnetic radiation is a kind of radiation including visible light, radio waves, micro waves, Infrared rays, gamma rays, and X-rays, in which electric and magnetic fields vary simultaneously [9, 10]. Electromagnetic radiations or waves are generated when an electric field (shown in red arrows) couples with a magnetic field (shown in blue arrows). Magnetic and electric fields of an electromagnetic wave are perpendicular to each other and to the direction of the wave [11, 12]. According to classical physics, electromagnetic radiation is the flow of energy at the

speed of light – the Universal speed limit of the Universe (C) through free space or through a material medium in the form of the electric and magnetic fields that make up electromagnetic waves such as radio waves, visible light, and gamma rays [13, 14].

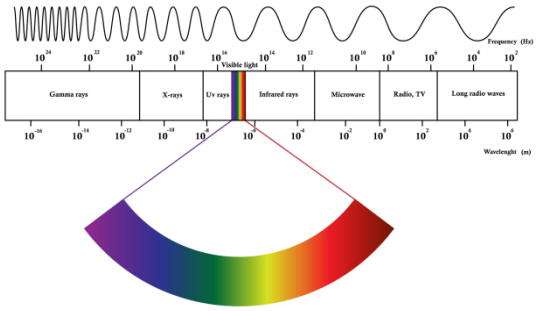

Figure: The Electromagnetic Spectrum with varying frequency: The narrow range of visible light is enlarged at the bottom with a rainbow shape.

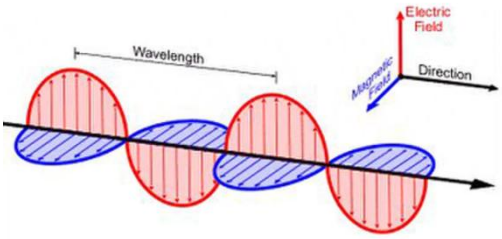

Figure: The Electromagnetic Wave

In electromagnetic radiations, time-varying electric field and magnetic field are mutually linked to one another at right angle and perpendicular to the direction of motion [15, 16]. An electromagnetic wave is characterized by its intensity and the frequency (λ) of the time variation of the electric field and magnetic field [17, 18]. According to the modern quantum theory, electromagnetic radiation is the flow of photons (also called light quanta) through space [19, 20]. Photons are packets of energy $(h\lambda)$ that always move with the speed of light – the Universal speed limit of the Universe [21, 22]. The symbol *h* is Planck's constant, while the value of λ is the same as that of the frequency of the electromagnetic wave of classical theory [23, 24]. According to the quantum mechanics, another way of viewing electromagnetic radiations is that it consists of photons, an uncharged elementary particle with zero rest mass which is the quanta of the electromagnetic force, responsible for all electromagnetic interactions [25, 26]. Now, electromagnetic radiation such as visible light looks like continuous to us because our eyes cannot detect its frequency and sinusoidal periodic variation (thus, with the only visible light, we only get one out of 10 billion information contained in the electromagnetic radiation; with this serious deficiency, we can hardly see the actual reality). The frequency of visible light is too high to detect it with eyes. But we know that visible light is periodic and has a shape (sinusoidal). Similarly, the time is a force (an interaction between energy and mass) (very much like visible light) that looks like continuous to us because we see time in the eyes of visible light. Because time is a function of visible light for us (visible light is periodic with a sinusoidal shape), it can be implied that time is a force with periodic nature with sinusoidal shape. Visible light is analogy to the physical time. Actually, time is the resultant of force interacting with matter in the space. Time has no meaning without the interaction of force with matter in the space. Time is only an interaction. According to the theory of quantum mechanics, electromagnetic radiation is actually photons, uncharged elementary particles with zero rest mass which are the quanta of the electromagnetic force. It implies that photons are particles and discrete packets of energy; it also implies that energy can be discrete too. From these concepts, it can be deducible that, the interaction between mass and force (which is time) is also discrete and a particle is responsible for these interactions. Thus, time is discrete too. The physical time looks continuous under visible light because it has a very high frequency, at least equal to or higher than the visible light. If it is equal to visible light, we can find its shape, periodicity and discreteness with a machine that is compatible with the visible light. If the time's frequency is higher than the visible light, we might need a machine that can read Ultra violet rays or X-rays or Gamma Rays etc. If time's frequency higher than gamma rays, we cannot read time with electromagnetic radiation.

2. The Theory Of Conservation Of Information

Nothing is infinity. Infinity comes into play when it is out of scope of psychology. Thus, the Universe is actually finite. And it implies that the information contained by the Universe is also finite – it is the theory of conservation of information. Because the Universe is finite, the total energy of the Universe is finite; which is the conservation of energy. And information is just a typical type of energy only. Also, the Universe is repetitive in nature – only one sample represents the mass. For example, one atom represents all atoms. One planet represents all planets, one star represents all stars, one galaxy represents all galaxies and one black hole represents all black holes. Thus, studying one atom can lead to studying all atoms (the whole Universe). Thus, all information is contained by one atom or all information is contained everywhere and everything is connected to everything. The more connection in the space – time, the more information is accessible. That is why; a non-local neural-network code is more powerful than an otherwise equal neural network.

3. Conclusion

Because nature is an encoded form of information; it is our only goal is to find easy ways to decode the nature. Because the frequency of light is way too high to be detected by eyes, visible light (photons) look like continuous to us; similar analogy can be applied to

time also – it looks like continuous to us because its frequency is too high and we see time in the eyes of visible light. Time is interaction between energy and matter. Time has meaning when a force acting on a mass. Time does not have any meaning at absolute rest. With the analogy with visible light, time has a shape (possibly sinusoidal), time is periodic in nature but time is discrete too supported by the theory of quantum mechanics. Nothing is there what is called infinity. Infinity exists only when it is out of scope of psychology. Thus, the Universe is finite. And it implies the information contained by the Universe is also finite – it is the theory of conservation of information. Because the Universe is finite, the total energy of the Universe is also finite; which is the conservation of energy. And information is just a typical type of energy only – has no scope other than finite only. Also, the Universe is repetitive in nature – only one sample represents the mass. For example, one atom represents all atoms. Thus, studying one atom can lead to studying all atoms (the whole Universe). Thus, all information is contained by one atom or all information is contained everywhere and everything is connected to everything. The more connection in the space – time, the more information is accessible. That is why; a non-local neural-network code is more powerful than an otherwise equal neural network.

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