

Superluminal Primordial Information Quanta (Sprinqs) Created and Compose a Multiverse of Equally Fine-Tuned Universes Evolving Life and Highly-Developed Minds

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Abstract

A proposed univon particle or cosmic quantum, composed of a circulating superluminal primordial information quantum (sprinq), created our universe and many others as a multiverse of equally “fine-tuned” universes. Their fundamental particle masses, forces, and other fundamental parameters are “just right” to evolve stable galaxies, stars, advanced life-forms and developed minds. Based on previous electron and photon models, sprinqs also compose the fundamental particles in our universe and other universes by moving superluminally in different ways to express different particle attributes. The univon is the quantum particle of a proposed univon quantum field. If other universes are detected having “un-tuned” values of their constants and thus without stable stars and higher life forms, this would suggest that all universes emerge by following purely physical laws. Our fine-tuned inhabitable universe would then just be an extremely improbable universe. However, observational evidence for a fine-tuned multiverse would support the hypothesis of a cosmic intelligence creating and maintaining our multiverse in a natural way.

Key words: Big Bang, cosmology, cosmic quantum, universe, fine-tuning, multiverse, creation, evolution, superluminal, univon, sprinq, life, mind, consciousness, anthropic principle, microvita, panpsychism, ectoplasm, paradigm, scientific revolution.

Introduction

Currently there is no consensus among cosmologists about what happened at the precise beginning of our universe at $t = 0$. The widely accepted inflationary big bang theory describes the state of the universe at about $t = 10^{-34}$ seconds, when the universe was an extremely hot, dense expanding state that later evolved matter, galaxies and stars, and developed for about 13.8 billion years to its present condition of accelerating further expansion.

The measured values for fundamental physical constants, forces and particle masses, as well as the measured cosmological constant or density of dark energy of the vacuum of space, have been described by cosmologists as being apparently fine-tuned to values that made possible the evolution of galaxies, stars, organic life and human beings in our universe. This means that if the values of many of these physical constants in our universe had been different by a few percent, and for some constants like the cosmological constant with differences very much less than that, stable galaxies and stars could not have evolved in our universe. In such physical conditions, living

beings with carbon-based biological structures and developed minds like ours could not have evolved either. For example, with a very slightly different cosmological constant, which is the density of energy in the vacuum of space, either a universe would have rapidly collapsed soon after its Big Bang, with no galaxies or stars forming, or the universe would have expanded so rapidly that its matter and energy would have spread out so rapidly that galaxies and stars would not have had time to form and stabilize. Slight differences in the values of other fundamental constants would have made it impossible for heavier atoms and therefore organic molecules for life to be produced.

The idea that human beings can exist only in a universe having conditions at some place and time in its history suitable for human beings to evolve and observe such a universe is called the anthropic principle. The universe we live in has been found to be particularly fine-tuned for galaxy formation and human existence, as described above. For some cosmologists, physicists and others, this fine-tuning is considered to be evidence for a supernatural or cosmic creator of our universe who arranged such fine-tuning so that human beings or similarly developed beings could evolve. There is an alternative hypothesis that many cosmologists and physicists prefer, which does not require a cosmic creator of our universe. It is the idea that our universe, which is special to us because we are able to live in it, is just one of very many universes in a multiverse composed of universes whose physical constants have a large range of values produced by a somewhat random physical process. Our universe would be just one universe in this multiverse that happened by chance to have physical constants that are fine-tuned enough to permit the evolution of stable galaxies, stars and living beings with developed minds. In the huge majority of the other universes having different physical constants, stable galaxies with life as we know it could not have evolved. A list of books discussing the anthropic principle and multiverse concepts is given in the references [1-16].

Georges Lemaître [17], who is considered to be the father of the Big Bang concept, proposed in 1931 the concept of a first quantum particle – the primeval atom – that exploded to produce our universe. Ralph Alpher and George Gamow [18] in 1948 used the medieval word *ylem*, meaning the primordial matter of the world, to describe the primordial particle plasma of the very early universe that they studied. Tryon [19] in 1973 proposed that universes are formed from time to time as quantum fluctuations. Gauthier [20] proposed that photons, electrons and positrons can be formed from a single helically-circulating quantum particle called a superluminal energy quantum. Gauthier [21] proposed the concept of the cosmic quantum, the first quantum particle of the universe, composed of a circulating superluminal energy quantum, produced from a cosmic quantum field. Gauthier [22] proposed that *ylem* actually consists of superluminal energy quanta, which now are named superluminal primordial information quanta (springqs).

The Univon and the Springq

In the present hypothesis, identical univon quantum particles, produced from a univon quantum field, created not only our universe but also many other identically fine-tuned universes in a multiverse. The univon, also called a cosmic quantum, is composed of a helically-circulating superluminal primordial information quantum (springq). The physical constants carried in the information content of each univon's springq are exactly the same in all univons and in all springqs, though springqs express different fundamental particle attributes in different environments. The univon is radioactive. The decay of a univon into less energetic products is the starting point ($t = 0$) of its created universe. The univon's springq rapidly multiplies itself into different quantum

fields and particles, leading very quickly to the early universe’s exponentially-rapid inflationary period and then to the Big Bang, which produces abundant relic dark matter particles of the universe as well as the less abundant ordinary matter. Univons made many other equally fine-tuned universes with identical fundamental forces and constants such as c , h and G , and identical particle masses such as that of the electron, proton and Higgs boson as well as identical vacuum energy densities (cosmological constants).

Because all of the fundamental physical constants contained in univons are correspondingly identical and not just lying in a precise range of values, “fine-tuned” is not the best expression to describe univon-created universes. This is similar to electrons, whose electric charge values on different electrons are identical and not spread over a narrow range of electric charge values. The probabilistic aspect of quantum theory acting within each univon-created universe ensures that each universe is unique although its fundamental physical constants are correspondingly identical in the univon-created multiverse of universes. All the fundamental particles in each universe such as electrons and photons are composed of springqs derived from each univon’s springq. All the fundamental particles in each universe are therefore quantum-entangled with each other.

Figure 1 below shows the trajectory (closed black curve) of the springq (small black dot) that composes a univon or cosmic quantum. The springq moves superluminally along the surface of a mathematical horn torus with maximum speed $c\sqrt{5} = 2.236c$ at the torus’ equator and minimum speed c at the center. The parametric equations and constants for the springq’s trajectory are given in Figure 2. More information about the equations and physical parameters of the springq’s trajectory is provided in Gauthier [5].

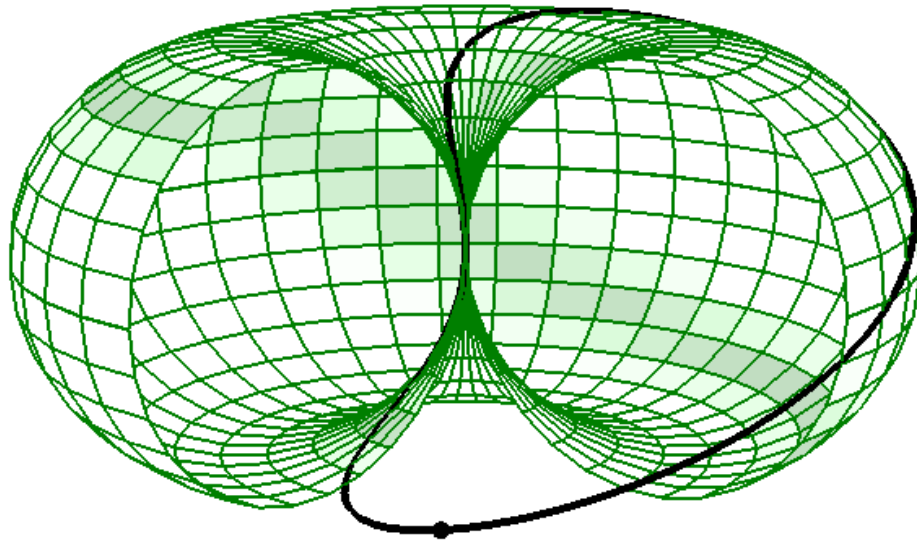


Fig. 1. The univon model composed of a superluminal primordial information quantum (springq). The mathematical horn torus surface on which the springq travels is cut away to show the interior. The black closed curve on the surface of the horn torus is the trajectory of the univon’s springq (indicated by the black dot.)

$$\begin{aligned}
x(t) &= R(1 + \cos(\omega t))\cos(\omega t) \\
y(t) &= R(1 + \cos(\omega t))\sin(\omega t) \\
z(t) &= R\sin(\omega t) \\
R &= \hbar / Mc = 2.9 \times 10^{-97} \text{ m} \\
\omega &= Mc^2 / \hbar = 1.0 \times 10^{105} \text{ radians/s} \\
M &= \text{mass of observable universe} = 1.2 \times 10^{54} \text{ kg}
\end{aligned}$$

Fig. 2. The parametric equations of the univon model composed of a circulating spring. The calculated maximum speed of the circulating spring is $c\sqrt{5} = 2.236c$ (at the equator of the mathematical torus) while its minimum speed is c (at the center of the mathematical torus).

Finding Pathways from the Univon to the Beginning of Rapid Cosmic Inflation

According to cosmologists, no one knows what happened at the exact beginning of our universe (at $t = 0$), because the history of the universe can only be traced back empirically and theoretically, using the current Big Bang theory, to a point in time that is very slightly greater than $t = 0$. Cosmology has advanced through imagination, observation, discoveries and analysis and by making mathematical models and testing their predictions. A proposed mathematical model must be discarded or modified if its predictions are contradicted by factual observational evidence inconsistent with the model's predictions. Although the time period between $t = 0$ and the theoretical onset of rapid cosmic inflation is very short, perhaps 10^{-34} s , cosmologists and theoretical physicists may propose pathways or stages of transformation between the decay of the univon's spring at $t = 0$ and the formation of quantum inflaton fields and other fields of the exponentially rapid cosmic inflationary period. Various pathway models can then be tested as knowledge and understanding of the rapid inflationary period and its associated particles and quantum fields increases. The goal would be to explore possible links between the univon model and the Big Bang model, as a possible test of the univon/spring hypothesis.

The Univon Multiverse Hypothesis is Falsifiable

The univon multiverse hypothesis is that each universe in a multiverse of universes was or will be created from a univon, and will have identical corresponding fundamental forces and constants like c , h and G , the same masses of its fundamental particles and the same cosmological constant as in our own universe. The univon multiverse hypothesis is falsifiable, as any scientific hypothesis should be. If a universe different from our own is detected with one or more fundamental constants or one or more masses of its fundamental particles different from that of our universe, then the univon hypothesis is falsified and will have to be rejected or modified.

Implications of the Univon Multiverse Hypothesis

With only one universe (our own) currently known (at least its observable portion) and begun (according to the widely accepted Big Bang theory) at a point in time (if time even existed then) about 13.8 billions years ago, it is not possible to say if the remarkable apparent fine-tuning of physical constants in our universe for the evolution of galaxies, life and developed minds is a statistical accident in a multiverse of un-fine-tuned universes, if it is the result of an intelligent cosmic fine-tuner, or if it is just a brute fact. Of course, we would not be here if our universe were not apparently fine-tuned enough for life to evolve here. If one or more universes discovered in the future are found to have exactly the same corresponding physical constants as our universe, and therefore are universes where life and developed minds could also evolve, this would strongly suggest that some form of cosmic intelligence pre-set the values of the physical constants contained in the univons and their Big Bangs so that life and minds could evolve in each universe. This would provide strong support for the univon particle hypothesis because identical univons create universes with identical corresponding fundamental physical constants, suitable for the evolution of galaxies life and developed minds.

In the eternal or chaotic inflation multiverse hypothesis of Linde [23], universes are proposed to be formed from a quantum fluctuation of vacuum energy, or by budding off from other rapidly-inflating universes. Such quantum fluctuations and cosmic buds are assumed to produce universes whose range of values for fundamental force constants and other physical constants like c , h and G are somewhat randomly produced according to physical laws, without any input of intelligence needed for this process. One principle motivation for creating multiverse hypotheses has been that a great many universes with a large range of values of many of their physical constants (that would in most cases not produce galaxies, stars, and life) are needed so that a few universes can appear to be fine-tuned. Such a multiverse is required to explain, without going beyond statistical physical laws or resorting to a cosmic creator, why a small percentage of such universes (like ours) could, purely by chance, appear to be fine-tuned for the evolution of stars, life and individual minds.

Many religious and spiritual traditions on the other hand have taught that one or more divine beings or deities or a cosmic creative principle created our observed universe and may also play a role in maintaining the universe and producing living beings, including human beings. The presently-accepted physics research paradigm or enterprise excludes explanations for the origin of the universe that include supernatural or non-physical causes. Non-physical explanations are often considered to be primitive and irrational, given the historical advances in scientific understanding and the resulting rapid technological development of society, and with further impressive physical discoveries and technologies very likely to continue. However, scientifically accepted proofs for the origin of the universe, life, individual minds and consciousness are still lacking within the current physics or natural sciences paradigm. Many physicists and scientists are highly optimistic and expect (as a kind of scientific faith or belief) that the origin of the universe, life and developed minds and the capacity for subjective awareness or consciousness will be ultimately explained purely by physical laws, matter and energy and their evolution into more and more complex structures.

In the midst of various hypotheses for the physical or non-physical origin of our universe, life and individual minds, there may be an objective way or ways to decide which explanation is correct, or at least ways that provide strong objective support for one set of hypotheses or another. The univon multiverse hypothesis proposes measuring the values of physical constants in

discovered universes and comparing them to the corresponding values in our universe, as one way to develop evidence for the the presence or absence of cosmic intelligence in the origin of our universe and development of our universe.

Cosmic Ectoplasm and Cosmic Mind

Suppose convincing evidence is found that supports the univon-multiverse hypothesis, which implies that cosmic intelligence had a role in producing the univon and setting the physical constants in the multiverse. What would be the source of that cosmic intelligence and how would it relate to the physical laws describing the evolution and operation of the universe? The univon is produced by a universal cosmic quantum field. It is now proposed that these quantum fields, whose origin is not known scientifically but are postulated in quantum field theory, are the link between cosmic intelligence and the expression of physical laws. Quantum fields are vibrational and give rise probabilistically to the particles of these quantum fields. These vibrational quantum fields, and all that derive from them, may exist as objects in a level of a cosmic mind that can take many objective forms, each expressing cosmic laws originating in a cosmic mind. Such an object-forming layer or level of a cosmic mind has been called in yoga philosophy, cosmic ectoplasm or chitta, the objective portion of a cosmic mind. Quantum fields exist within a cosmic mind that is derived from consciousness. Quantum fields therefore embody consciousness and transmit consciousness and mental qualities to the physical particles formed from quantum fields, although in a denser and more highly qualified particulate form.

According to Anandamurti [24] and Sarkar [25] tantra yoga philosophy has a coherent, yet still evolving, description of the creation and evolution of the universe, life and minds from cosmic consciousness and cosmic mind. According to Sarkar [26] sub-atomic living beings called microvita play a decisive role in this cosmic evolutionary process, spreading life and mind in the universe. Microvita can have both physical and psychical aspects, and form elementary particles as well as chemical atoms. Microvita can explain panpsychism which describes the pervasiveness of mind and awareness within matter at all levels of complexity in the universe. The concept of microvita was the inspiration for the spring/univon hypothesis. Collective structures of subtler types of microvita can form individual minds.

According to tantra yoga philosophy, ectoplasm, chitta or mind-stuff composes the objective portion of a mind, whether the cosmic mind or an individual mind. The objective portion of the mind is the part of the mind that takes the form of objects that are then seen or experienced by the subjective portion of the mind that has a sense of doing or doership (the mind's "doer-I" portion). This doer-I portion of the mind is backed up by and derived from an even more subtle subjective portion of the mind, the mind's "I exist" portion, which only has the feeling of self-existence. The "I exist" portion of the mind is backed by a conscious knowledge of existence or "knower-I" or individual self or soul that is beyond the mind but observes the individual mind. Sometimes the chitta or ectoplasm is called the "done-I" portion of the mind. The perception of objects results from the action of the mind's "doer I" on mental objects formed from the "done I", for example "I see the ball." One portion of the mind is perceiving another portion of the mind. One difference between the cosmic mind and the individual mind is that for the cosmic mind all objects (including the physical universe and human beings) are internal (formed within the cosmic chitta) and nothing is external, while for the individual mind, objects are experienced as either internal or external to the individual mind. Prior to the level of cosmic "I exist" in cosmic mind, is the level of cosmic consciousness or expressed consciousness. In the univon/spring hypothesis, univon fields, univon

particles and their evolved universes with galaxies, stars, planets, and living beings with undeveloped and developed minds are all derived from consciousness and all exist within a cosmic mind.

The Cosmic Cycle of Creation

Tantra yoga philosophy, newly summarized in an aphorismic format by Anandamurti [24] describes an infinite supreme consciousness (Shiva) utilizing its inherent creative power (Shakti) to evolve from itself an infinite cosmic mind that created and maintains our finite universe with its galaxies, stars, planets and living beings with individual minds, all within the cosmic mind. At a particular stage of mental development, where free will and therefore moral choices conducive to human welfare and social progress are possible, these individual minds become human minds. The supreme consciousness, expressing to humanity as the supreme guru or supreme love personified, expresses itself through various media to give guidance and practices for assisting all human beings to develop, experience and attain the highest consciousness and spiritual fulfillment, and to love and serve other living beings. The singular desire and goal of the supreme consciousness is to maintain this endless cosmic cycle of creation and evolution – from the supreme consciousness to many conscious individual living beings with their individual minds and personal life challenges, who by overcoming all obstacles, return to limitless blissful oneness with the supreme consciousness.

The univon/spring hypothesis ensures that every universe evolved within the cosmic mind would provide physical conditions suitable for the evolution of living beings with highly-developed individual minds. Universes teeming with life and highly-developed individual minds would then not just be lucky accidents in a myriad of failed universes whose essentially random fundamental physical constants make them unfit for the evolution of developed living beings similar to us.

The Next Scientific Revolution – Cosmic-Mind-Based Science

The univon/spring hypothesis for a fine-tuned multiverse raises a challenge to the idea that purely statistically-based physical laws can explain the origin of our universe. If every univon-created universe is fine-tuned for galaxies, life and developed minds to evolve, then purely physical, statistically based laws would not be a sufficient scientific explanation of the creation of the universe. Cosmologists would have to accept either that an intelligent creative activity produced our universe, either from consciousness or from literally nothing, or that the existence of our universe is a brute fact with no explanation at all. Either explanation would go against the grain of many cosmologists who believe that the origin of the universe should be described or describable by purely physical laws, with no need for a conscious universe creator. Such a physics paradigm or project that admits only physical laws to describe, explain and predict all aspects of the universe has a long and difficult but until now a relatively successful history. By developing the natural sciences including physics without fears of and control by arbitrary or vengeful supernatural deities, humanity has been gradually liberating itself from the tyranny of such belief systems, which have often been created and maintained by exploitive religious cults and systems. The historical process of increasing the intellectual and scientific liberation of humanity from dogmatic and exploitive religions continues today.

Still, for scientists to reject in advance the possibility of an intelligent and benevolent universe-creator, if scientific evidence strongly supports this hypothesis, would actually be a rejection of

the scientific enterprise itself. It would show a kind of dogmatic and even fearful approach (often historically justified by past struggles for scientific truth and intellectual freedom against dogmatic oppositional forces) that scientists have often accused religions of using. The scientific enterprise, whose great successes have been based on pioneering innovative ideas, independent critical thinking, and rigorous mathematical models and research methodologies, will have to, at some point and despite its fears as well as painful historical facts, acknowledge the value and usefulness of the scientific hypothesis of a conscious intelligent cosmic creator or creative principle, if such a hypothesis is supported by sufficiently strong scientific evidence. If the hypothesis of a conscious universe-creating cosmic mind is incorporated into the present scientific enterprise, this could bring a revolutionary shift from the materialistic scientific paradigm dominating science today towards a more liberating, holistic and productive scientific paradigm.

The present hypothesis is that univon particles, produced by a cosmic quantum field having both physical and mental properties, created our fine-tuned universe and many other fine-tuned universes in a multiverse, all evolving stable galaxies, life and developed minds. Such a cosmic quantum field could be called conscious and intelligent, since blind chance could not create such a fine-tuned multiverse of billions or more fine-tuned universes, without postulating a myriad of other un-fine-tuned multiverses that were created by random values of physical constants in those other multiverses.

Let us suppose that the univon/spring model for the fine-tuning of multiverses starts gaining theoretical and empirical support, so that a significant number of cosmologists become sympathetic to this idea and it starts to influence their own theorizing and observational work in cosmology. Though starting out as a minority viewpoint as every new idea does, this development could be the beginning of a new scientific revolution, one that overturns or rather significantly expands the currently dominant scientific paradigm for exploring the universe that is guided by physical laws but lacks a conscious creative power and a conscious source of scientific laws. A scientifically-supported univon/spring model would lend support to the further hypothesis that univons and a highly intelligent univon cosmic quantum field exist within a conscious, highly intelligent, creative and powerful cosmic mind, and that the multiverse of universes created by univons all exist within this cosmic mind.

For this cosmic mind hypothesis, no physical objects or entities exist outside of the cosmic mind—all are mental forms within the cosmic mind. Including the cosmic mind hypothesis with other working cosmological hypotheses would create a revolutionary new paradigm for physics and for science in general. Since the cosmic mind is entirely mental, physics would become the study of the cosmic mind's apparently physical (but actually mental) expressions, which include present-day physics and natural science in general. Nature would come to be understood as the style of action of the creative power of cosmic consciousness, acting through the cosmic mind. This natural creative activity of the cosmic mind would include creating the laws of nature, including the laws of physics, and evolving universes within the cosmic mind that are maximally suitable for the evolution of living beings and highly developed, conscious individual minds.

The idea of a cosmic mind or divine creative powers has a long evolutionary history in human societies. Many societies and cultures have formulated ideas of and beliefs in invisible controlling entities and creative powers behind the natural or visible world. As societies developed, these beliefs took the form of various religions with associated leaders, organizations, doctrines, scriptures and practices. But there has never been a cosmic science based on consciousness and a

cosmic mind, and having universal global acceptance, the way that physical science is accepted throughout the world today. Throughout history, the nature of higher consciousness has been explored, and will be continue to be explored, by individuals who through their efforts have achieved higher knowledge and understanding and shared this knowledge and understanding with others.

Clearly, integrating a supreme consciousness and cosmic mind into the current scientific world view could produce a scientific revolution. With this expanded scientific paradigm, many currently unsolved problems in physics, biology, psychology and global society might find solutions. New explanations for the origin of the Big Bang, the origin of life, the evolution of minds from cosmic-mind-evolved matter, and the origin and nature of individual minds and consciousness itself may be found which have never found adequate scientific explanations within a purely physical or materialist paradigm. With new scientific knowledge discovered by working with a consciousness/cosmic-mind paradigm for scientific research could come new technologies that would greatly benefit humanity and other living beings. Also, research fields like alternative medicine, parapsychology and after-life research that currently exist on the fringe of the materialist scientific paradigm may make great progress and gain greater scientific acceptance using a holistic scientific paradigm based on concepts of consciousness and cosmic mind integrated with physical science.

If the hypothesis of a cosmic mind producing univons and fine-tuned universes gains scientific support, this will have implications not only in the scientific, technological and medical worlds but in the larger society as well. A rational description of a cosmic mind that is accessible and attainable to all human beings who make the required efforts could be a source of deep meaning to existence as well as motivation for human beings to attain higher goals of life. They could seek to attain, by a rational approach, their chosen life goals consistent with and attainable through the scientific hypothesis of a cosmic mind derived from infinite consciousness.

There may be other philosophies that also describe the creation of the universe within a cosmic mind and which would also help individuals and societies to progress. Such philosophies can be compared with tantra yoga philosophy to the benefit of all. The scientific purpose would be to further develop a philosophy and science of consciousness, cosmic mind and creation that future scientists can agree is most suitable for integrating with physics and natural science in general.

Conclusions

Cosmologists currently admit that they do not know what happened at the exact beginning of our universe. The proposed univon (universe particle) model for the creation of our universe and other universes suggests that quantum pathways from the time of radioactive decay of the univon (defined as $t = 0$ for the Big Bang) to the formation of the inflaton quantum field of the early rapid inflationary period of our universe may be explored, developed and tested. The purpose of this would be to test the univon hypothesis for the creation of our universe.

The univon multiverse hypothesis was developed from modeling fundamental particles such as the photon and the electron and positron as being composed of helically-circulating superluminal energy quanta. This led to the modeling of a first quantum particle of the universe, called the cosmic quantum, now also named the univon. The superluminal energy quantum, now called a superluminal primordial information quantum (spring) is proposed to compose identical univons

that created our fine-tuned universe and other equally fine-tuned universes in a multiverse. Identical univons, created directly or indirectly by the multiplication of springs expressing different particle characteristics, compose all the fundamental particles in our universe, and in other universes as well. The univon is proposed to have produced our finely-tuned universe, allowing the evolution of stable galaxies, stars, life and developed minds. The univon multiverse hypothesis predicts that all other universes produced from univons will be as finely-tuned in their physical constants as our universe is. This makes the univon multiverse hypothesis open to refutation as a scientific hypothesis. If at least one force constant or physical constant like c , h or G or one fundamental particle mass is found to be different in another universe from the corresponding constant or mass in our universe, the univon hypothesis will be falsified. Comparing physical constants in other observed universes with those of our universe may therefore contribute to scientifically and objectively deciding whether or not a cosmic mind or other higher cosmic intelligence helped create our universe.

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