

String Theory with a New Interpretation Can Model the Mind

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Abstract.

String theory is presented in simple terms with existing and new interpretations. It is explained how the new interpretations allows string theory to model two parallel universes in addition to our known universe and why dark matter and dark energy can be seen as influence from matter in the parallel universes and why there is no other interaction between the parallel universes and our known universe. A conception of the mind which is compatible with modern psychology and introspection is presented. It is explained how the parallel universes could provide what we observe as the mind.

Introduction

String theory is an advanced mathematical framework that transforms an input assumption to output statements. The input assumption is: elementary particles are one-dimensional vibrating strings rather than point like entities with no extension. Quantum mechanics and the theory of relativity are embedded into the mathematical framework. Some of the output statements are verified mathematical models of all known elementary particles and forces. Additional statements are non-verified requirements to the observable cosmos such as requirements for extra dimensions, extra particles and entities called 'branes'. The non-verified output statements have been interpreted in various ways in order to enable confirmation by the real observed universe. Missing compatibility between the statements and the observed universe has reduced the popularity of string theory as a potential 'theory of everything'. This article provides a new interpretation of the non-verified requirements that lets string theory use the concept of branes and the extra dimensions and the extra particles to model the mind as an entity separate and different from the 'physical' universe but as a part of what is labelled 'cosmos'.

We have no agreed understanding of what the mind really is. This article uses a description of the mind which is compatible with modern psychology and introspection.

String theory

Even if the mathematics of string theory is extremely complicated, the results of the calculations can be explained in simple terms for the general public [1] [2]. Strings can either be open such as a violin string or closed such as a necklace. The mathematical equations require the strings to vibrate in nine independent directions. We have only three independent directions (spatial dimensions) in our universe. The normal interpretation used to satisfy the requirement for the extra spatial dimensions is that the extra dimensions are curled up to such a small size that verification by measurements is not possible. The curling-up of dimensions can be done in extremely many different ways, each way giving a different string theory, creating a 'string theory landscape'. Such an interpretation is not maintained in this article.

Ends of open strings must hang on to something. This something is called a 'brane' which can be an entity having any number of dimensions up to ten. Our universe is suggested to be a three dimensional brane. The gravity force is modelled as a ring shaped string. It is not connected to any brane and can wander between different branes. This means that gravity can act between matter particles in different branes. All other known elementary particles and forces are modelled as open strings. Both ends of these strings are connected to our brane/universe, but they must vibrate into other dimensions which could be part of other branes. Different branes have different laws of physics since they do not have the same elementary particles that implement matter and force. We cannot measure electromagnetic radiation coming from matter in other branes. The electromagnetic force might also not exist in other branes. When physical objects bounce, it is the electromagnetic force that repels the objects. This means that matter from other branes will not interact or collide with physical matter, except for gravity that can attract matter in different branes to each other. [1 p388 etc] The author's conclusion is that string theory is capable of modelling two extra parallel three-dimensional universes that can be all around us without us being able to measure the presence of their content by other means than by gravitational attraction.

Supersymmetry is incorporated to string theory and introduce a requirement for one and maybe two extra sets of particles that have not been discovered in real life. [3 p166] The author's conclusion is that these sets of particles could exist in two different parallel universes (branes) such as explained above. The spatial dimensions of the two parallel 'non-physical' universes can also be non-physical, i. e. distance in those

universes must be measured by something that is different from metres or inches; which means that cosmos is a true 9-dimensional entity and the string theory's requirement for 9 spatial dimensions is satisfied. The extra dimensions do not need to be curled up and there is only one solution to the string theory landscape. The two extra parallel universes could model what we perceive as the mind, explained below.

In order to verify the conclusion with an experiment, we could see if the universe contains huge amounts of gravitating matter that do not interact with physical matter in other ways and do not emit electromagnetic radiation. This measurement has already been performed and the author's conclusion is confirmed. Dark matter and dark energy could be matter existing in two parallel universes that are labelled 'non-physical'. The existence of dark matter and dark energy can be seen as the first experimental confirmation of string theory.

The 11th dimension of string theory (M-theory) is in the popular scientific literature depicted as a spatial dimension, but it is really expected to be a 'coupling strength' [4][5]. If the mind is a part of the cosmos such as this article suggests, then we could say that cosmic dimensions define degrees of freedom for the attention. Attention can be directed to different spatial positions and it flows with time. An 11th dimension could be the speed of time since the speed of time can vary considerably in different states of mind. If the mind functions as a video recorder with a series of still images then the sampling time of the mind, the duration of each still image, could be a time-like dimension that gives the speed of time and also depicts how strongly the attention of the observer is connected to the cosmos. Short sampling time gives slow speed of time, strong coupling and a small scale view, while long sampling time gives fast speed of time, loose coupling and a large scale view. The coupling strength required by M-theory could be interpreted as 'speed of time'. This interpretation is not yet verified mathematically.

If the mind constitutes two branes that are different and separate from the physical universe where our body including the brain is placed, then there is a question of how the communication between the mind and the body takes place. Only closed strings can carry this information. The gravity force between two particles can become very strong when distance approaches zero. A physical particle and a non-physical particle can occupy the same space, so they can snap together, being held together by the gravity force. A mental force is then capable of exerting a force on a physical particle via the non-physical particle. This is a fairly primitive information transfer, but it can probably cause genes to switch on and off depending on mental state and induce emotions to the body (emotions are sensed as if they sit in the muscles). A fifth force modelled by a circular string is hypothesized. It should have some interaction with or resemblance with electromagnetic force so that information exchange between the brain and the mind can take place seamlessly both ways. The alleged aura associated to plants and animals could indicate such a force. This force must be very feeble such as gravity is much weaker than the other forces. Our instruments could just have missed its influence.

The description of the mind below makes the above interpretation of string theory a perfect match as a 'theory of everything'.

A conception of the mind

The mind is what we observe when we shut our eyes and perform introspection. Thoughts, images and emotions come and go. They are stored in the mind and we can direct our attention to different content. Neurologists know which parts of the brain are active when storing and retrieving memories but they never found any kind of imprint of the memory that can be retrieved. Some neurologists hope to find 'traces' in the brain made by the memories. Based on introspective work with Acem meditation [6] the author concluded that the mind must be a real entity independent and separate from the brain and it must store all kinds of psychological content. We can relate to this content with different psychological capabilities such as directing our attention, suppressing content or allowing content into our awareness, holding on to content or letting content go from our attention.

Human minds are mostly individual, but content also seems to be accessible by other persons such as in telepathy. If you shut your eyes and direct your attention inwards, you are aware of a psychological universe and it is the same universe for all persons and animals. The outer physical universe contains trees, mountains, suns and galaxies; the psychological universe contains among other things psychological residues. Each residue is a container for emotions, memories, images, values, self images and a world-view representing a certain situation or psychological complex. Some residues are strongly emotionally charged such as traumas and some are neutral such as plain memories. When our attention comes close to a residue, the charge will tend to hold our attention and the content will pour into our conscious awareness or unwittingly influence us in different ways. The distance in the psychological universe is measured by emotional distance. Emotionally connected residues are close to each other. The thoughts and emotions of our loved ones are also close to us in this universe.

A second inner universe could exist where the mind is very still and the sense of time is not present, or is at least different. You can come into contact with this in precious moments, such as when you are in front of a fireplace or hiking in the mountains. Thoughts in this universe are non-phenomenological; they can contain a 'fragrance' of all sorts of things without being specific. All possibilities are present at once. We could call this the intuitional universe. After grasping an intuitive thought, you can sometimes use days, weeks or months to shape it into a specific theory, piece of art, product or way of behaviour. We can say that an intuitive thought collapses into a specific incarnation in time and space. For another person at another time, the same thought could collapse into a very different incarnation, but it would express the same basic quality or insight when related to its time and place.

The personality is a structure of the mind that is part of this intuitional universe. Two persons with a 'good chemistry' feel close even if they are not physically close or emotionally close. Their personalities are close in the intuitional universe. Separation is measured as a kind of quality difference which is the measure of distance in the intuitional universe. Structures of the intuitional universe have a great resemblance with quantum mechanical waves. The intuitional universe could be seen as a quantum mechanical universe.

The speed of time has not been very interesting for scientists. For contemplative oriented persons in the eastern traditions, speed of time has always been a very essential feature that says something about the state of the mind. A state of mind where time passes very fast is called samadhi. It is often experienced that time passes faster in meditation than during normal wake state. Time passing slowly like in a slow motion film can be experienced during very strong concentration such as for soldiers during an assault. Some kinds of meditation facilitate a state of mind that is the opposite of concentration, a free open mental attitude. Level of concentration which is the coupling strength of the mind could give the speed of time and scope of view.

These are the main issues when looking at string theory as a theory of everything which is including both the physical and the mental worlds. A deeper and wider discussion is published in a book [7] and also as a scientific article [8]. Information is available at www.amatterofmind.net.

References

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