

There is nothing beyond the edge of the universe – What does that mean ?

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Abstract

Imagine a finite universe. This view raises the questions: what exists beyond the edge of the universe? What does it even mean by the edge of the universe? Many physicists say that there is nothing beyond the edge of the universe, without comprehending what they mean by this. We propose a solution to this incomprehensible puzzle as follows. The universe is made of finite amount of matter contained in a finite spherical volume of space. What would happen to a spacecraft going to the edge of the universe for exploration? As the spacecraft goes far outside this sphere, it experiences that space gradually loses its property with increasing distance from matter. The permittivity and permeability of space continue to decrease with distance from matter. The electrostatic forces between and within atoms and molecules of the spacecraft gradually decrease, and eventually diminish to zero, at which point the atoms, molecules and elementary particles that make up the spacecraft and thereby the spacecraft eventually 'dissolve' and go out of existence. We propose this to be interpretation of the statement that there is nothing beyond the edge of the universe. No matter, no space exists outside the universe. We propose that matter and space have no independent existence.

Introduction

Philosophers and physicists have been puzzled for millennia and centuries concerning the size of the universe. Is the universe finite or infinite? Even more incomprehensible is to think of a finite universe because such a universe would have an edge, which would raise the incomprehensible question: what is beyond the edge of the universe? What does it even mean by the edge of the universe? In fact, the main reason for infinite universe theory could be to avoid such a deep conceptual problem. The mainstream view of a finite universe is to think of an analogy with a sphere. An insect walking on a spherical object will not see any edge. If one goes in a straight line along the surface of the earth, one will finally return to the starting point. But this is only an analogy and no one, including those who proposed this idea, can imagine or make sense of how someone travelling in a straight line in space would return to the same starting point in space. This idea is inspired by Einstein's spacetime curvature theory. We believe that it should be possible to find paradoxes created by this idea. Many physicists also say that there is nothing beyond the edge of the universe, without comprehending what they mean by this.. By 'nothing' they either don't understand what they mean or they mean space without matter, but this would not be the edge of the universe because the universe is both space and matter.

Matter defines/determines space and space defines matter

In this paper, we propose an idea that may finally solve this puzzle based on new findings proposed by this author in previous papers [1][2][3].

1. Matter defines/determines space and space defines matter. There is no space without matter and no matter without space
2. Therefore, vacuum permittivity and permeability are determined by matter. Evidence for this could be the observed increase in the rate of GPS atomic clocks relative to those on earth, which could be due to decrease of vacuum permittivity and permeability with distance from earth (not because of Einstein's gravitational time dilation).

We propose that there is finite amount of matter in the universe, contained in a spherical volume of space with finite radius. Beyond this region, vacuum permittivity and permeability gradually decrease with distance from matter and eventually diminish to zero at sufficiently large distance. Imagine a spaceship travelling far beyond/outside this sphere. As the vacuum permittivity and permeability continue to decrease, the electrostatic forces within atoms and molecules of the spaceship gradually decrease with distance, eventually diminishing to zero. At this point not only will the electrostatic forces between atomic nuclei and the electrons reduce to zero, but also elementary particles themselves 'dissolve' into non-existence, with the spacecraft going into non-existence. Therefore, the answer to the question “ what is beyond the edge of the universe ? “ is: nothing. By nothing we mean that any physical object that goes to the edge of the universe would go into non-existence. No physical object, no matter, no space can exist beyond the edge of the universe. Nothing (matter, space) can exist outside the universe.

An analogy is a tent. The tent in this case represents space, and the poles supporting it represent all matter in the universe. Just like the tent will collapse without the poles carrying it, space too would collapse in the absence of matter in the universe.

Thus a universe in which only the sun exists as we know it would be impossible.

This theory will not be complete without the discrete nature of all physical quantities proposed in a theory proposed by this author [1]. The decrease in vacuum permittivity and permeability with distance from matter is not continuous, but discrete, decreasing in steps, eventually becoming exactly zero at sufficiently large distance.

Conclusion

Philosophers and physicists have been puzzled for millennia and centuries by the question of what could exist beyond the edge of the universe. Not only has there been no answer to this question. The question itself was puzzling: what does it even mean by the edge of the universe? Contemporary physicists are puzzled: if space is expanding (according to Einstein's General Relativity theory), what is it expanding into? This paper has finally solved this puzzle by a coherent theory that both gives meaning to the question and then provides the answer. Matter and space have no independent existence. Matter defines space and space defines matter. With increase in distance from matter in the universe, space gradually loses its property, that is vacuum permittivity and permeability approach and eventually diminish to zero. A spaceship going far enough from matter in the universe will go out of existence beyond some distance, never to be recovered. Nothing, no space, no matter can exist outside the universe. The edge of the universe is a region of space far from all matter in the universe beyond which a spacecraft would go out of existence. This is how the statement that there is nothing beyond the edge of the universe should be interpreted

References

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Glory be to Almighty God Jesus Christ and His Mother Our Lady Saint Virgin Mary