

Example of essay on wormhole

[Sport & Tourism](#), [Baseball](#)



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A wormhole theoretically is known to be a passageway through space-time that can be used to create short routes for extensive journeys that go across the universe. Wormholes are mainly forecasted through the general relativity theory. Wormholes have been forecasted come with the dangers of high radiation, unexpected collapse, and unsafe contact with alien matter. A wormhole when viewed depicts a tunnel that has separated ends in space-time. It can be pictured as a two dimensional tube surface that connects various parts of the surfaces (Nelson, Peter & Rohitash Rao 67).

There are no evidences that are observable about wormholes according to researchers, however, according to the theory of general relativity, the equations contain valid solutions that have wormholes. Wormholes have been used in teaching the theory of general relativity. The type of wormholes include Schwarzschild wormhole. This type of wormhole can be present in Schwarzschild metric that is used in the description of a black hole that is eternal in nature. This type of hole however has been predicted to collapse too soon and this can hinder any transfer of a substance from one end to the other. There are wormholes that can be crossed from both directions and are

called transverse wormholes. These holes can be crossed via both directions and such holes are made possible only in the case that there is exotic matter that has negative energy that is used in reinforcing the stability in them (Rodrigo 120).

According to the Casmir effect, the quantum field theory can allow energy density in specific regions in the space for a negative value that is relative to ordinary energy in the vacuum. Also, theoretically, the quantum field can allow a state whereby the energy at any given time is arbitrarily negative. According most physicists like Kip Thorne, effects that are similar to these can transform a traversable wormhole by increasing its stability (Richdale 45).

Although, the physicists have not yet discovered any natural process that can be predicted forming a wormhole that is natural in nature through the general relativity context. The quantum hypothesis sometimes suggests wormholes that are tiny in size can disappear and appear at a Planck scale spontaneously. The versions that are stable are suggested to be possible candidates of the dark matter.

The theories also suggest that if there was a tiny wormhole that is being held open on a negative mass of cosmic string and it appeared during the big bang period, it is possible that it could have been inflated by the cosmic inflation to microscopic size (Haarsma 11). The wormhole theory has been also related to magnetic fields energy since there is net instability of position of force and through the connected multiple space, this can be termed to be a wormhole by physicists (Haarsma 11).

Schwarzschild wormhole

This wormhole is also known as Einstein-Rosen bridges. They are connections that come between the space that can also be modeled as vacuum solutions which equate to the Einstein field equations. These wormholes are currently known to be fundamental sections of maximally extended versions that relate to Schwarzschild metric that describes eternal black hole that has no charge and no rotation too. Maximally extended is used to mean that space time should not possess any form of edges so that there are no possible trajectory of a particle that is free falling while in space time (Margulis, Lynn & Eduard 67).

Meanwhile, it should make it possible for a continued path that is arbitrarily far into the past or the future this can only be possible only if there is gravitational singularity in trajectory that is similar to black hole's core. For this requirement to be made possible, additionally to the black hole interior that particles enter while falling via the event horizon that emanates from outside, there should be exterior regions that are separate the white hole core region (Margulis, Lynn & Eduard 67).

The white core region allows for extrapolation of trajectory particle that individuals observing from the outside can see to be rising away up from event horizon. In the case that there are two separated core regions in relation to maximally extended space time, there are separate exterior regions too which are sometimes called universes. The second universe in this case allows for extrapolation of possible constituent part of trajectories in interior regions of the two. This can only mean that there is an interior black hole region that is a constituent of mixed particles that fall from the

universe and also from the white hole, the particles can fall from the white hole's interior escaping into the universe too (Dahl, Michael & Lisa 7).

Traversable wormholes

These holes allow travelling from both ends of directions that is from one particular part of the universe to the next in a very quick manner and also it allows travelling in the same universe. The possibility of existence of traverse wormholes in the general relativity was demonstrated first by Kip Thorne and the graduate student in the year 1988. The two proposed a wormhole that is a spherical shell that is held open by exotic matter. Other types of similar holes were discovered as solutions that could allow for the equations linked to general relativity. In this concept, a wormhole can be generated from traversing paths if it does not pass through exotic matter region.

However, pure Gauss-Bonnet gravity for wormholes, the exotic is not required for existence and they can exist even on their own without any matter present. This type of wormhole has been proposed to be naturally earlier created in the universe. In this instance, the wormhole connect two specific space times that means there is travel in time principle. According to this instance, it is not possible to put into use a wormhole in traveling back to the previous time when the wormhole conversion into time through acceleration of one of the mouths to earlier time (Obaidat 42).

Challenges of Reality of wormhole

Science fiction is full of tales of traveling that occurs through wormholes. But through the reality of such travelling it is even a more complicated matter,

and it is possible that there is none that has not yet been seen and this makes the reality of wormholes to remain a history. The key first problem that is evidenced in the trying to show the reality of wormhole is the size. Primordial wormholes have been predicted to be existing in the microscopic level, which is ranging at 10–33 cm. However, also the universe continues with its expansion, it could have happened that some wormholes may have stretched to larger and greater sizes (Obaidat 42).

Also, the problem can be related to stability. The predicted wormholes by Einstein-Rosen can be rendered useless in travelling travel due to the reason that they easily collapse. But recently in a research, it was established that a wormhole that contains "exotic" matter that can be remain open and unchanged for a longer period of duration. Exotic matter, which can easily be confused with dark matter but should never be confused or antimatter, has negative energy density and also outsized negative pressure (Xiao, Yang & Frank 21).

Such like matter is possible to have been seen only in the behavior of specific vacuum states which are part of the quantum field theory. Moreover, in the case that a wormhole had adequate exotic matter, either occurring naturally or added artificially, it can still be theoretically used as one of the methods for sending information and travelers via space (Xiao, Yang & Frank 21).

Wormholes also may not only connect the two separate regions that are found in the universe, but they can also be for connecting two varied universes. Likewise, scientists conjectured that should one mouth of a wormhole be moved in a particular manner, it can allow for time travel.

However, the British cosmologist Stephen Hawking argues that such a situation not possible. As much as adding exotic matter into a wormhole can result into stabilizing it to a position that human passengers are able to travel safely via it, there still exists a possibility that adding normal matter can be satisfactory in destabilizing the portal.

Current technology is deemed to be insufficient to make the size bigger or even be involved in stabilization of wormholes, even if it were possible for them to be found. However, physicists continue to carry out their exploration under the same concept as a technique of space travel having the hope that through technology innovation, it will eventually be possible to make use of them (Xiao, Yang & Frank 21).

Wormhole put into practice

The Einstein theory can allow for the practical existence of wormhole. This is based on the fact that it states that 'any mass curves space-time.' In real life this can be linked to a situation whereby two individuals are holding up for example a bed sheet and at the same time stretching it in order to make it tight.

In such a circumstance, if an individual placed a baseball on top of the bed sheet, the weight that comes from the baseball is likely to roll into the middle of the sheet and also cause the sheet to curve at the same particular point. A good comparison to this situation can be through the use of a marble. If a marble was to be placed on the edge of the same bed sheet that was in use previously, it can travel it is can be evidenced to travel to the baseball centre due to the reason that the baseball created a curve.

Therefore, through this example, it possible to deduct that, space is seen to

be two dimensional plane and not four dimensional. If the same bed sheet was to be folded over and a space left in between the bottom and the top. When a baseball is placed on the topmost side, a curvature is bound to take form. In a circumstance that similar mass is placed on bottom side of the sheet, at the point that is in correspondence with the position of the baseball at the top, the second mass is bound to eventually meet the baseball. This can be used to apply in the same scenario of the wormhole and could be used to interpret how a wormhole can develop.

A situation taken from space, masses that exert pressure onto various parts of the universe can combine at the end and result into creation of tunnel. Theoretically, this tunnel can join at separate times allowing a passage through them. However, there is high possibility that there can be unforeseen quantum property or physical property that may prevent a wormhole to occur. Even if the wormhole existed, they are likely to be very unstable. According to Stephen Hawkin, wormhole can take the form of a quantum foam which is the tinniest environment that occurs in the universe.

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