Magical Wormholes

By Clark M. Thomas

Abstract

Wormholes as popularly conceived are the goofy juice of theoretical physics, and a fertile field for bad science fiction. Wormholes on human scales cannot long exist within the physics we know. Their theoretical persistence pushes cosmology toward a dark ditch of our own making.

I propose to look at why so many cosmologists, more nimble with numbers than wise, have embraced large-wormholes theory as a key to multidimensional cosmology. Here is "Gresham's Law of Theoretical Physics" at work.

In contrast, placing true science before magical thrills reveals popular wormhole cosmology as anti-scientific. I must be quite odd, because I get many more thrills from searching for actual Truth, than embracing wormy science fiction models. Hollywood's cosmic wormholes are fun for fictional plot development, but treating them seriously insults our highest human intelligence.

Space.com's general article about wormhole theory has these two early paragraphs:

> "Wormholes were first theorized in 1916,
> though that wasn't what they were called at the

time. While reviewing another physicist's solution to the equations in Albert Einstein's theory of general relativity, Austrian physicist Ludwig Flamm realized another solution was possible. He described a "white hole," a theoretical time reversal of a black hole. Entrances to both black and white holes could be connected by a space-time conduit.

"In 1935, Einstein and physicist Nathan Rosen used the theory of general relativity to elaborate on the idea, proposing the existence of "bridges" through space-time. These bridges connect two different points in space-time, theoretically creating a shortcut that could reduce travel time and distance. The shortcuts came to be called Einstein-Rosen bridges, or wormholes."

White Holes and Black Holes

By comparison, so-called black holes suck in, and white holes spit out. It is easy to see that black and white holes are two ends of an inter-brane dimensional "hose." The faucet end "sucks in," and the nozzle end "spits out." Nifty, but there are several fundamental problems with this too-elementary model:

What determines which end is which? Can white/black tunnel-holes switch direction at will, and if so, why and when? Each end could also be both white and black, meaning objects encountering such a vortex could either be sucked in, or pushed away. What happens to transported masses (however granular) encountering other masses traveling fast within the same tunnel in opposite directions?

Even "solving" this bi-directional puzzle by hypothesizing two parallel tubes nearby going in opposite directions between the same two branes, creates more serious doubt. If, for example, one tube dominates the other, then what stops it from subsuming a juxtaposed neighbor, and thereby restoring the original puzzles?

More importantly, will any two-dimensional plane, or brane, have juxtaposed wormholes with gravitational superiority over others? If that were so, then across sufficient trillions of years the increasingly superior brane could suck in all the other branes – leaving one 4D brane, which is more like what elegant 4D multiverse models now portray without branes.

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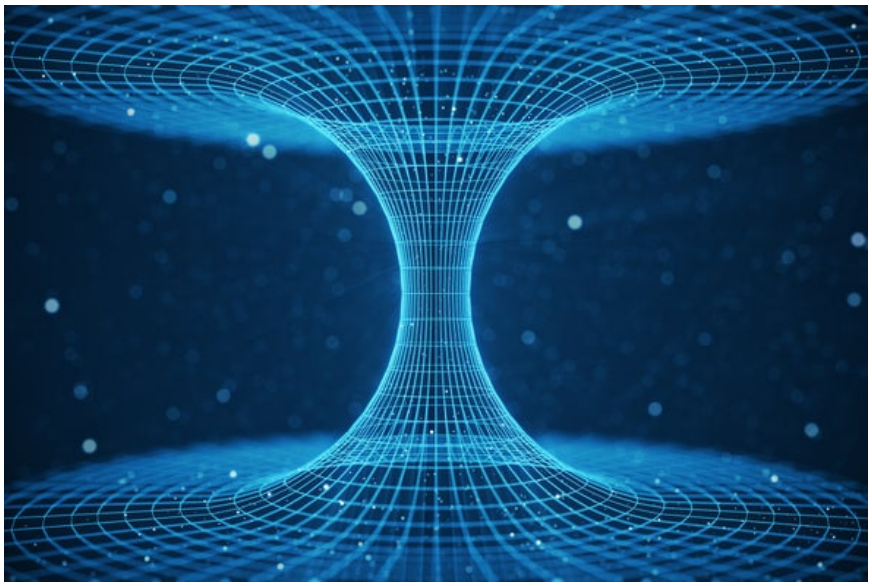

It may be remotely possible to construct spacetime wormholes that could safely transport humans inside spacecraft within our visible 4D universe, and not just between adjacent universal branes. There are serious issues aplenty with bringing any of this sketchy idea to fruition. Pretty images generated by computers cannot replace better theory.

The space.com article referenced above contains this not-encouraging analysis of achieving real Hollywood wormholes:

> "The first problem is size. Primordial wormholes are predicted to exist on microscopic levels, about 10^{-33} centimeters. However, as the universe expands, it is possible that some may have been stretched to larger sizes.
>
> Another problem comes from stability. The predicted Einstein-Rosen wormholes would be useless for travel because they collapse quickly.
>
> "You would need some very exotic type of matter in order to stabilize a wormhole," said Hsu, "and it's not clear whether such matter exists in the universe."

It therefore looks highly unlikely that we will ever see a real Matthew McConaughey going back and forth within wormholes.

Thus sadly noted, there are several interesting corollaries:

(1) The whole subject of space-alien UFOs has recently become supercharged. There appears to be some things hovering above and closely monitoring us, maybe for the overall galactic good, while we myopic humans are blindly busy pushing ourselves toward extinction. Maybe they are waiting for our omnicidal "intelligent life form" to complete the unforeseen zombie mission. Waiting aliens will then move to make themselves at home within a seriously depopulated and degraded Earth "biosphere."

(2) One offshoot of Einsteinian GR is string theory. This is the pet theory of clueless Dr. Sheldon Cooper. For some time string theory was popular, but nothing has ever been found to support the absurd ideas behind this extreme branch of physics. Ideally,

string theory would lead to a Theory of Everything; instead, it has helped push academic physics into the ditch.

Regarding what actually are strings, they are definitely not one-dimensional or two-dimensional. Real strings can be about the linear size of imaginary strings, but are three-dimensional "bead" strings – and thus much more allied with the Standard Model, or at least its 21st-century emerging variant. It is also within this new model that we discover just how the speed of light ("c") achieves this velocity within vacuums.

(3) Emerging from the early model for strings, is another poly-dimensional model that lingers among those with tenure: This favored version of string theory is M-theory. Its claim to fame is the assertion (derived from normalizing math) that there are eleven dimensions, and a mere 10^500 discrete universes. When we understand that our local visible universe has about 10^82 atoms, the obscene number of proposed entire universes is a math joke. Just imagine how many fake wormholes could link among so many fake-math universes.

(4) None of the detected (and not Photoshopped) space craft have arrived here from great distances via wormholes. Current astronomical estimates are for several advanced civilizations within a few thousand light years radius, and many more beyond.

We are fortunate for now, because if the number of competing potential civilizations were large (having arrived by wormholes), there could be many UFOs above our skies competing for the right to thrive on our biospheric ashes.

Such battles could be fought among swift fleets piloted by advanced AI robots. Yes, the not-too-distant exoplanet societies will have figured out that their own squishy, home-planet beings (if such they be) don't need to subject themselves to generational trips for such a puny prize. Just send out the AI brutes, and hope they can open opportunity doors around the proximal Milky Way. Such could be their formula for regional survival of the fittest.

An Experimental Footnote

Some ruthless rulers would kill any messenger who brought bad news, even if true. The lack of expected good news could be equally bad. A more modern way to handle inconvenient truth tellers is to ignore and isolate them and their ideas. The best way to deflect unwelcome science is to move the science goal posts, in this case by requiring experimental proofs.

The first image of a central black hole came from the great elliptical galaxy in Virgo cluster, M87, with its central black hole of 6.5 billion solar masses. By linking radio telescopes across a global face, radio astronomers were able in 2019 to achieve a virtual "mirror" of several thousand miles diameter, providing enough resolution for this task. This first image is one of the greatest scientific achievements of the 21st century.

Along with all the self-praise, one scientist was recorded saying this black hole has no evidence of a large wormhole. Very few celebrants paid notice. The source referenced above is now hidden behind a paywall. Subsequent images with even higher resolution have reinforced the inconvenient non-presence of large wormholes.

A search through "google.scholar" and other sources reveals no description of any large wormhole associated with this object. If a highly energetic, compact mass of 6.5 billion solar masses, capable of seriously warping GR spacetime, cannot generate a decent wormhole, what can?

A great science discovery in the negative has been ignored for a popular version of the brute image of something already well understood. Of course, goal posts can be moved more than once. Too bad, for many true gems of science are at our feet, if only we would care to look there.