

Opinion

Black Holes and Time: Opinion

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Abstract

This opinion essay is about how singularities may exist in a different dimension than we are, and on black holes and their time correlations. It also briefly mentions another way the universe may have been created.

Introduction

This section will include references to support the claims within this opinion essay, as well as some background information, such as the aim of the manuscript.

“The original idea dates back to the 1970s with the work of Stephen Hawking and Bernard Carr. Hawking and Carr reasoned that in the universe’s first fractions of a second, small fluctuations in its density could have endowed lucky — or unlucky — regions with too much mass” [1].

“Gravitational waves are ripples in the fabric of the universe, caused by the motion of giant, accelerating celestial bodies... But the new evidence points to a different kind of gravitational wave—a constant, ambient hum that’s known as the gravitational wave background” [2].

“We might be the product of another, older universe... The seed this mother universe forged inside a black hole may have had its big bounce 13.8 billion years ago, and even though our universe has been rapidly expanding ever since, we could still be hidden behind a black hole’s event horizon” [3].

“Once the star had been thoroughly ruptured by the black hole’s gravity, astronomers saw a dramatic rise in high-energy X-ray light around the black hole” [4].

“Astronomers have discovered a new way to determine the current expansion rate of the Universe, known as the Hubble constant... Today’s paper shows that we can measure the Hubble constant by determining the distance to supermassive black holes” [5].

“Matter is heated to millions of degrees as it is pulled toward the black hole. This hot matter glows in X-rays. Researchers are using measurements of the polarization of these X-rays to test and refine models that describe how black holes swallow matter, becoming some of the most luminous sources of light — including X-rays — in the universe” [6].

More Information

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Black holes and time, how i see it

If one were to simply describe gravity like a teabag descending on a cup of water, except that it is not descending, it is already there, it could easily describe this constant ‘hum,’ as well as gravity itself. It has been well concluded that gravitational waves travel at the speed of light [7], however, this does not mean that something cannot constantly send out gravitational waves, causing it to have a constant hum. After all, space is constantly there, as well as the object, so why wouldn’t gravity itself also be?

In the statistical analysis side of this essay, one might argue that I do not have much data to prove my opinion, so what I have done to supplement this is the following mathematical calculation (Figure 1).

$$\left(\left(\frac{(299792458^2)}{(5.916 \cdot 10^{-44})} \right) (2.176 \cdot 10^{-8}) \right) 1.44\pi = 1.49549338 \times 10^{53}$$

Figure 1: The calculation equation equals rather close to the mass of the universe. This is because the equation is about the speed of light, singularities, time, and the radius of circles.

*The actual mass of the observable universe is estimated to be around 1.46×10^{53} , (for example, Arthur Eddington [8]).

Einstein showed that, relative to where everything else is and how fast you are going, then time passes completely differently. The same genius man, also showed that mass

increases with speed relative to the speed of light to the power of 2, shown by the equation below (Figure 2), also derived by Einstein among others:

$$m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

Figure 2: Relativistic Mass Equation Picture Owned by Study.com

What makes this equation relevant to this opinion is that it can help cause the universe to expand, as well as help cause the universe to exist. The formula, $E=mc^2$, (Albert Einstein's Theory of Special/General Relativity) is relevant as well [9]. Photons are bundles of light energy travelling at the speed of light, forming 'particles', giving us many things, (for example, Albert Einstein, Theory of General/Special Relativity.) A couple of these things that photons give us are time and the universe. This materializes in view of the fact that fundamental particles of nature must be sending out near-infinite photons in every possible direction, or the universe, nor time, would simply not be possible since, relativistically, one fundamental particle, such as an atom, would need to send out 2 photons to reach 2 different places, instead of concerning with just one. This fundamental particle would need to be sending out photons in so many directions it would be near infinite. Along with that, the time would arise when something with no mass is constantly filling the entirety of the universe, travelling at an incredibly high speed, causing things to expand for the reason that it is constantly pumping out something having a size, but still no mass, in every direction. Time would also come about when the photon is causing the universe to expand [10].

But how do black holes relate to all of this? Dark matter, which speeds up the expansion rate of the universe, as well as adding extra matter and energy to the universe, and, "The bigger it gets the faster it accretes, and the faster it accretes the bigger it gets, so you end up in trouble" [11] in this quote, 'it' is referring to dark matter. Keeping in mind that, "The hot gas in this collision was slowed by a drag force, similar to air resistance. In contrast, the dark matter was not slowed by the impact, because it does not interact directly with itself or the gas except through gravity" [12].

One could say, from this research, that the hot gas in the collision would of course be slowed by a drag force because it is gas, therefore causing massive air resistance. As I will go on about in a minute, dark matter is starting to sound a lot like the photons previously described. If one would include Einstein's Theory of General Relativity [9], in which photons are also affected by gravity, it sounds even more like them.

And in the opinion described in this paper, they cause space to expand, in the way that dark matter, does, (e.g., in NASA (.gov), Approaching the photon sphere [13], "Photons orbit the black hole at the distance of the photon sphere"). More photons around the black hole would result in a higher spatial expansion, as described with dark matter.

Conclusion

The primary message that this paper is meant to give, is, that there are more possibilities than just dark matter, but that this is also just an opinion.

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