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This is a graded discussion: 10 points possible

Show Due Dates

D3(BH) Weekly Discussion

Erin O'Connor

Jan 30 at 11:57pm

1 44

Due this week

First, be sure to do the reading and watch the lectures:
Assigned reading and lectures

Then answer the following questions in this discussion forum (and yes, you may look to see what others write, but try to find what they might have missed and you should go back to the original reading and lectures to get answers for yourself). Then post your own question at the end, and then answer someone else's question. If no question is available, go ahead and check back later until the due date. If nothing comes available you can then pick any question you wish.

We hope to emulate a seminar classroom environment where students can share ideas. Always be respectful with all communications you have with your esteemed fellow colleagues (your fellow students) in this course.

- 1. DISCUSS in some detail something you found unusually interesting or intriguing in the reading or lecture material. Are there new insights that you have gained (something you had not thought of or considered before)? Focus on one of the concepts and explain as best you can in your own words. (4 pts)
- 2. Post a question that you have about something you read. Be sincere. What do you want to know? Write the word QUESTION all in caps, so that your fellow classmates know what your proposed question to the class is. (3 pts)
- 3. ANSWER the question of another student according to what we discussed in the lectures or what you read in the assigned readings (don't just make something up). Try to answer a question that no one else has responded to yet (but not a hard and fast rule). A good way to respond to another student's question would be to say something like, "Good question! The answer can be found on page..." and give the quote from the reading. You are free to reference other sources outside of class material, but always consider the credibility of the source, state what the source is, and give the link. (3 pts)

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Reply

Luke Rutherford (https://canvas.sbcc.edu/courses/46681/users/373514)

Feb 2, 2022

DISCUSSION:

I find it fascinating how Stephan Hawking dedicated so much time towards proving that the universe started off as a singularity then suddenly change his mind and disprove his theory. It helps show me that even though great discoveries can be made those discoveries could be wrong with new information. I also find the shape of space-time interesting. Whether the shape is flat, spherical, or like a saddle it puzzles me how it formed. I think the thought of space being infinite or finite excites me the most when thinking about the shape.

QUESTION:

Since it is theorized that the universe started off as a singularity could it be possible that inside every black hole singularity is a universe? Or could black hole singularities have the potential to expand and create another universe?

Reply

Sarah Savage (https://canvas.sbcc.edu/courses/46681/users/375381)

Feb 5, 2022

ANSWER/QUESTION:

That is a crazy question, Luke! So if a black hole singularity expanded, would it create a new universe that would be mixed into our universe? Would it obliterate our universe? We wouldn't see it coming. Would it be a fabric layer on top of our fabric? Seems like this would be how a parallel universe could be created...

Reply

Franco Diaz Campo (https://canvas.sbcc.edu/courses/46681/users/403036)

Feb 6, 2022

ANSWER

Hi Luke,

It is a callous question since we know nothing of the universe. The universe is infinite and as sad as it hears, we still don't have the instruments to prove those theories. But I like that question since we can think of it a lot of time. I think a black hole can have the potential to expand and create another universe.

Edited by **Franco Diaz Campo (https://canvas.sbcc.edu/courses/46681/users/403036)** on Feb 6 at 8:13pm

Reply

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:57am

Originally Posted 2/14/22

I think Hawking was "exploring" new theories that were a step up, or advanced, his original theories. It's not like his original theories would have been completely invalidated, just altered, changed, corrected.

Very good thinking. It could be that every black hole is a universe, or that every microscopic virtual particle pair creation (we'll talk about that later) is also a universe.

Reply

Sarah Savage (https://canvas.sbcc.edu/courses/46681/users/375381)

Feb 5, 2022

DISCUSSION:

I mentioned this during the discussion last week, but the idea that it's the fabric that expanded during the Big Bang and not the matter "on" the fabric moving away from the other matter is so new to me. Now this week, adding in the concept that this fabric could have expanded at a rate faster than the speed of light is really shaking up the Big Bang Theory for me. It has me wondering about whether an explosion of that magnitude can really cause the fabric to move that fast. If that is the case, then perhaps the fabric itself follows a completely different set of laws.

After watching the video on Stephen Hawking I am in awe that he was able to be so mentally focused on his work rather than focused on his disease. I have to wonder whether he would have made such enormous discoveries without the pressure of having to push forward in his career. The video made him seem like an unmotivated jokester who wasn't very focused on

his education before his diagnosis. His success is certainly owed a lot to his wife Jane for all she did to move his personal and professional life forward, without whom he may have been put into an institution.

QUESTION:

With the Open Universe Theory, if humans still exist in a billion years, would they look up to the sky at night and see nothing? There would be no astronomy, and no way of figuring out how they, Earth, or the universe came to be?

Reply

(http

Hana Putnam (https://canvas.sbcc.edu/courses/46681/users/427074)

Feb 6, 2022

ANSWER:

Sarah, what a profound question! I think it depends. I accidentally read Chapter 2 this week before realizing the lecture was actually centered around Chapter 3. Chapter 2 delves into the relativity of space and time. There's a particular passage on page 28 where Hawking is discussing how what we perceive on Earth in terms of stars and light is actually light that is just reaching us from stars that have ceased to exist for MILLIONS of years. I'm not sure if on the scale of billions of years all of this would have had a sufficient time to equilibrate and we'd actually see no other light but I thought it was an interesting point and sort of answers your question. It's a cool chapter, I'd definitely recommend checking it out if you haven't already.

Edited by **Hana Putnam (https://canvas.sbcc.edu/courses/46681/users/427074)** on Feb 6 at 5:58pm

Reply

(http

Brian Wolden (https://canvas.sbcc.edu/courses/46681/users/274832)

Feb 6, 2022

Hi Sarah,

Interesting question! I would guess, given the Open Universe Theory, there would have to be a point at which nothing could be visible in the night sky as eventually all of the galaxies would burn out and go dark, and all the light from those stars that could reach us would have. (There is actually a Doctor Who story arch that sort of talks about this!) It could also be that the light from these stars red shift enough that we can't see them with the naked eye but some light could be detected with various light/energy detecting instruments. I can't guess at the time scale of that though and a billion years actually seems a little too short of time for that to happen! Particularly since, as was mentioned in

our lecture, there is something like 9 times more intergalactic dust than galaxies at this time. That means there are a lot of galaxies yet to form that will probably still be omitting light.

Reply

(http

Victor Jensen (https://canvas.sbcc.edu/courses/46681/users/416476)

Feb 6, 2022

Unsurprisingly, there is actually a Vsauce video on that topic:
https://youtu.be/7uiv6tKtoKg (https://youtu.be/7uiv6tKtoKg)

(https://youtu.be/7uiv6tKtoKg)

The night sky will not be dark in a billion years though. Everything within our galactic neighborhood is gravitationally bound, and will eventually collide to form one mega-galaxy in around 5 billion years. Everything outside that will be darkness, and like astronomers used to think, our entire observable universe will be just our own galaxy. Many people may start to doubt that anything ever existed outside our super-galaxy. The night sky will be brighter than ever however.

The universe going dark in the Open Universe Theory is called the heat death, and would not occur for an absolutely unimaginable amount of time.

Reply

(http

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:55am

Originally Posted 2/14/22

Very thoughtful responses and questions. That was a cool video link. I haven't seen those before.

Good observation/question about being inside the balloon. You are right in how you describe that, that we can not leave the surface, but I need to update your thinking, it's actually a 4th dimensional surface and the inside would be in the 5th dimension. We will talk about this next week in class.

Yes, I'm not sure what he meant either, but perhaps he has written a paper on it before he died. I hope so. But for us, the first step is to understand what he did write about, before worrying about what he changed with regard to his theories and thinking.

Reply

(http

Franco Diaz Campo (https://canvas.sbcc.edu/courses/46681/users/403036)

Feb 6, 2022

ANSWER

Hi Sarah,

It is a tough question, and I think it is very hard to answer right now, since EVERYTHING changes, and we don't know if in some years, everything will disappear, or if the stars will still be there. It is a question you can philosophize for a long time.

Thanks,

Franco Diaz.

Reply

(http

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:59am

Originally Posted 2/14/22

Yes, Hawking was amazing. Some say his disease "freed" him to think all day long, but at what a cost.

Don't be so pessimistic about the future. At the end of the semester, I will be sharing an author who had similar thoughts about being overwhelmed by all the universe has to offer, but don't take it negatively, it's a positive thing and I'm sure there is much still to be learned and much to hope for and look forward toward.

Reply

(https:/

Hana Putnam (https://canvas.sbcc.edu/courses/46681/users/427074)

Feb 6, 2022

DISCUSSION:

This week, I really enjoyed getting more concrete evidence about why the universe is not static. I was having a really hard time with this concept when it was first introduced and learning about the Doppler effect and how wavelengths can be used to understand movement of the universe really helped me understand this more clearly.

QUESTION:
One thing that I found confusing this week was Friedmann's first assumption that the universe looks the same from all directions. The example of blowing up a balloon is used to illustrate this concept. Surely if one could be inside a balloon as it was being blown up you'd notice differences in space between the parameters of the balloon? It seems to me that given the different luminosity of stars and galaxies in different places you could notice some differences depending on where you are in the universe. How is it possible the universe looks the same from anywhere?

Reply

(http

Victor Jensen (https://canvas.sbcc.edu/courses/46681/users/416476)

Feb 6, 2022

Due to random chance the universe would not be exactly the same everywhere, but what he meant was if you looked infinitely out in each direction, the average would be the same. The furthest we can look out is to the MBR, which is very close to identical in all directions. In fact, looking on a scale larger than local groups, everything does seem to be almost identical in every direction.

Also with the balloon example, it is impossible to be inside the balloon. The 2D surface of the balloon is our entire 3D universe. Everything humanity does is stuck to the surface of the balloon. To get inside it would require a 4th dimension.

Reply

(https:/

Malachi Scott (https://canvas.sbcc.edu/courses/46681/users/409981)

Feb 6, 2022

1) What I found unusually interesting and really got my attention was the fact of how much our concept's and idea's in regards to the universe and our understandings of it were formed and

reformed. the number of scienctists that attributed to our discoveries and understandings without the technology we have today is simply astonishing.

2) In regards to a question about something read, I was wondering WHY AT THE TIME WHICH WE REFER TO AS THE BIG BANG WOULD THE CURVATURE OF SPACE TIME BEEN INFINITE.

Reply

Lex Richardson Oliphant (https://canvas.sbcc.edu/courses/46681/users/376967)
Feb 6, 2022

Hello Malachi,

According to a website/article from the university of Pittsburg for one of their classes they state "Einstein's gravitational field equations tell us the matter density equals the summed spacetime curvature. So, **if the matter density is infinite**, the curvature of spacetime has become infinite as well."

Reply

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)
11:00am

Originally Posted 2/14/22

Good question. It's a mathematical thing. At the very instant of the big bank, the idea is that the universe was infinitely dense, infinitely small, and the formulas then show an infinite curvature, but it's hard to imagine what that would mean physically. Physics breaks down.

Reply

Brian Wolden (https://canvas.sbcc.edu/courses/46681/users/274832)
Feb 6, 2022

DISCCUSION

One thing from this lecture that I found particularly interesting, and enlightening was the discussion of flat Friedmann model of the universe. I had previously thought that this model seemed highly unlikely compared to the other two given that a tiny fluctuation in either direction would, presumably, push it into a closed or open model. The discussion of the flat model in terms of a universe with zero net energy made the appeal and elegance of this model much more apparent. Now I understand why, for many, this model has such appeal in that it fits so well with other theories of energy conservation and requires fewer components to make it work. No additional energy or gravity is required. I am also always interested in the inflation of the universe, particularly hyperinflation, and the idea that the expansion of space is independent of movement within that space. It is a really fun thing to try and wrap my head around.

QUESTION

Is there a point when the CMB will no longer be detectable from Earth? Since it represents a finite moment in time, it seems like will eventually go away and only persists now because of the expansion of space outpacing the speed of light/speed of CMB. Or will the CMB continue to redshift at a rate that means it will always be present but at a continuously decreasing frequency?

I also have another question that occurred to me while thinking about gravity and last weeks lecture. When we were learning about Olbers' paradox we learned about the diffusion of light causing stars farther away to appear dimmer because of the exponential increase in area as you move farther away from the light source in three-dimensional space. (This may not be exactly how it was put but it was something I took away from that example.) My question is, is this also what is happening with gravity? Does the force of gravity decrease exponentially the farther you get from the source because the same force of gravity is being distributed over a larger area of space? If so, if we lived in a two-dimension reality (like in Flatland, for example), would the effects of gravity be constant regardless of far you got from the gravitational body? If that were true, would gravity not diminishing over space cause it all to "stack" on top of other gravity and basically result in a two dimensional singularity?

Reply

(http

Lexie Brent (https://canvas.sbcc.edu/courses/46681/users/122267)

Feb 7, 2022

Hi Brian! I really like your questions, and as for the CMB redshift questions, I'm quite curious about that as well!

I'll try my best to answer your other questions. The Inverse Square Law that causes light to appear dimmer proportional to your distance from it *is* the same law that causes the force of gravity to weaken due to distance from the source.

A hypothetical two-dimensional reality is super interesting to think about. I've never read or seen Flatland so I'm not exactly sure how physics works in this reality, but since gravity is the curvature of space-time, a four-dimensional reality, I don't know if there would be enough dimensions for gravity to exist. And since everything is two-dimensional, would there be any mass for the gravity to act upon?

(I tried to research this further to understand what a hypothetical gravitational force in a two-dimensional reality would look like but somehow I got lost somewhere in quantum physics hahaha)

Reply

(http

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

11:01am

Originally Posted 2/14/22

All your thoughts and comments are very well developed. Yes, the flat model is very appealing for the reasons you state. The CMB will probably always be detected but just as longer and longer wavelengths. It's now microwave radiation, but eventually it will be radio wave radiation. Your Dr Who red shift example is a known discussion item. If Dark Energy rips the universe apart, that's exactly what will happen. We won't see other stars.

Reply

(https:/

Franco Diaz Campo (https://canvas.sbcc.edu/courses/46681/users/403036)

Feb 6, 2022

Discussion

I found fascinating this week's video that most of the life of Stephen Hawking was dedicated to finding what we are, from where we are from, and how all of us were created. I like it because he is one of the most intelligent people that has ever existed in our history. I think that for him and all of us, having that incapacity was, in some part, an advantage because after that, he dedicated all his life to studying and doing research about physics. We owe him a lot because

he introduced us to many topics that no one ever before noticed. He is a good person, and because of him, we have a lot of new knowledge and new theories of the universe.

Question

If Stephen Hawking didn't die, do you think he would still give us a lot of new theories of the world?

Reply

(http

Lukas Gott (https://canvas.sbcc.edu/courses/46681/users/417976)

Feb 6, 2022

Hey Franco! While I think Hawking's ideas and discoveries should never be undervalued, I believe new theorists probably provide a lot of new ideas but just aren't as famous.

Reply

(http

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:38am

Originally Posted 2/14/22

I'm not sure I understand your question. But you are right in your answer to Franco, that there are new theories and new ideas about the universe. We continue our quest to learn about the universe.

Reply

(http

Abigail Jacobs (*She/Her*) (https://canvas.sbcc.edu/courses/46681/users/367167)

Feb 6, 2022

I think that Stephan Hawking had a mind like no other and would have been able to use our technology today to create new theories as well as study them.

Reply

(http

Malcolm Tircuit (https://canvas.sbcc.edu/courses/46681/users/427388)

Thursday

Hi Franco,

I would totally love to think that maybe if Steven Hawking lived for at least one more year he would continue to amaze us with his discoveries. Of course, there is no way to know. Who knows, maybe he would have found a grand unification theory after all.

Reply

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:35am

Originally Posted 2/14/22

Yes, it's a shame Hawking is not with us anymore. I think he would have continued to provide insight into the complexities and mysteries of the universe.

Reply

Victor Jensen (https://canvas.sbcc.edu/courses/46681/users/416476)

Feb 6, 2022

I was actually quite surprised by Hawking's statement "It is perhaps ironic that, having changed my mind, I am now trying to convince other physicists that there was in fact no singularity at the beginning of the universe – as we shall see later, it can disappear once quantum effects are taken into account" on page 9. I knew that alternative theories existed, but I am not familiar with any of them, and am incredibly curious to what Hawking is going to state later.

QUESTION: So my question is of course, if not the Big Bang, what does Hawking think could have occurred at the start of our universe?

Reply

Lex Richardson Oliphant (https://canvas.sbcc.edu/courses/46681/users/376967)

Feb 6, 2022

1. DISCUSS

I find it very interesting that Hawking changed his mind on the theory that he wrote multiple papers and an entire book on! I had never heard that he had a change of thinking in his later

years until now. I would like to do more research on the the work he did to disprove his own theory.

Sidenote: In the lecture when we were on the discussion of the doppler effect, I immediately thought back to the episode of the Big Bang Theory, when Sheldon dressed as the Doppler Effect for Halloween.

2. QUESTION

Because of Friedmann's assumption about the universe being the same no matter where you are in the universe, does this imply that constellations, or similar star formations, repeat multiple time throughout the universe?

Reply

(http

Alak Fryt (*He/Him*) (https://canvas.sbcc.edu/courses/46681/users/354278)

Feb 6, 2022

Hey Lex, I can see what you're thinking and I would agree that this could be similar in other galaxies throughout the universe. Obviously they wouldn't be the same formations because the constellations that we have here are based on patterns that were noticed in the night sky over the years. So I'm sure from other planets in other galaxies, after looking into the night sky for a while you might be able to pick out a set of stars that form a familiar figure.

Reply

(http

Naomi Xu (https://canvas.sbcc.edu/courses/46681/users/27955)

Feb 7, 2022

I might be interpreting this wrong, but the assumption that everything being the same no matter where you are isn't necessarily that each star and planet in our galaxy would be copied and pasted in other galaxies, rather because the universe is expanding and everything, no matter where you are, is getting further away from you; therefore, no matter where you are in the universe, you would feel like you're at the center.

Reply

(http

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:56am

Originally Posted 2/14/22

I think Hawking was "exploring" new theories that were a step up, or advanced, his original theories. It's not like his original theories would have been completely invalidated, just altered, changed, corrected.

Reply

Benet Bouchard (*She/Her*) (https://canvas.sbcc.edu/courses/46681/users/408920)

Feb 6, 2022

DISCUSSION

I was very intrigued by the idea that if the universe was expanding at a less than critical rate the force of gravity would cause it to contract. This concept reminded me of hydrostatic equilibrium in many ways. I'm also more troubled perhaps than intrigued by Friedmann's idea that the universe may look the same in any direction as seen from any other galaxy.

QUESTION(S)

If the universe were to collapse at the hands of gravity would it collapse at the same rate that it has expanded? Why does hyperinflation only take place between galaxies without affecting astronomical objects?

Reply

Lukas Gott (https://canvas.sbcc.edu/courses/46681/users/417976)

Feb 6, 2022

DISCUSS: I found it incredibly interesting that Newton figured out what elements compose a star based on what colors are missing. Newton figured out that the stars each admitted a certain series of colors through a glass prism, then figured out that certain elements absorbed the missing colors thereby being part of the makeup of the star.

QUESTION: What the slight red/blue color spectrum in our galaxy from planet to planet change based on other galaxies?

Reply

Abigail Jacobs (*She/Her*) (https://canvas.sbcc.edu/courses/46681/users/367167)

Feb 6, 2022

DISCUSSION:

Edwin Hubble created indirect methods of measuring distance in space and made it into 2 factors that we now use: how much light it radiates, and how far it is from us. I thought this was super cool as he was trying to explain one thing and then he had to condense his findings and it created something that astrologists use today. "The different wavelengths of light are what the human eye sees as different colors, will the longest wavelengths appearing at the red end of the spectrum and the shortest wavelengths as the blue end." This is also super cool because with the wavelengths having red as the longest and blue as the shortest, red is the coolest color and blue is the hottest.

QUESTION:

When where and how did the first black hole get discovered? How many universes are out there that we still don't know about?

Reply

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:39am

Originally Posted 2/14/22

Very thoughtful responses and questions. Also, careful not to confuse astronomy with astrology... haha. They are a bit different. Astrology does have a lot of foundational astronomy though.

Reply

Alak Fryt (*He/Him*) (https://canvas.sbcc.edu/courses/46681/users/354278)

Feb 6, 2022

DISCUSSION:

I thought it was interesting how the expansion of the universe could be compared to the way a rocket is launched on Earth. It makes much more sense understanding why the universe had to be static when thinking about it as a rocket. But I think it's even more interesting how Einstein was so sure about this that he designed his theory in order to make it possible.

QUESTION:

I was wondering if Einstein's cosmological constant of "antigravity" is supposed to relate to Hubble's Constant. Like is Hubble's Constant based off of the idea of antigravity or if they are two unrelated ideas?

Reply

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:36am

Originally Posted 2/14/22

Einstein's Cosmological constant is different than Hubble's Constant. Einstein's was about a force that keeps the universe from collapsing (because he didn't realize it was expanding), whereas Hubble's constant is a measure of the expansion rate.

Reply

Lexie Brent (https://canvas.sbcc.edu/courses/46681/users/122267)

Feb 6, 2022

I found the closed universe model/theory most interesting. I understand the attraction to the idea of everything coming full circle in a big crunch instead of everything continuing to drift away from each other forever. It makes me wonder if the universe is so perfectly scheduled in that way, from the Big Bang, to expansion, to contraction, to the Big Crunch -- then is it possible to think that the crunch is related to the bang in a the-end-is-the-beginning type of cycle? This is probably not a new thought but I think it's interesting nonetheless.

QUESTIONS: I can't help but imagine the open universe theory as us somehow reaching the universe's escape velocity. Like the ball that's thrown away from earth so fast that it doesn't come back down, the theory is that the universe could expand so fast or so much that gravity can't bring it in. If it did stop the universe in the closed universe theory, this "gravity" that would cause the universe to contract – is that all of the cumulative gravity of all of the objects in the universe added up? And to bring back the ball analogy, the ball eventually slows before coming back to earth – is there a way to predict when the universe's expansion would slow down and eventually stop? In that moment where it's stopped, between expansion and contraction, would the universe be considered static? (I guess that last one might be more of a vocabulary question haha).

Also, how long would the universe's movement be stopped for?

Reply

(http

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:34am

Originally Posted 2/14/22

Very thoughtful responses and questions. I too like the closed universe idea, but science hasn't been able to fully "close" the universe yet. Much more work needs to be done. You can perhaps be someone who gets involved to do it.

Reply

(https:/

Lucca Gambone (https://canvas.sbcc.edu/courses/46681/users/405319)

Feb 7, 2022

DISCUSSION: What I found super interesting was from the PBS video, talking about his early life. In the video there is a bit where Hawking talks about how it feels to have a young actor depicting your young life. Hearing the actor talking about how he was trying to capture Hawking and translate it into cinema. I find it so interesting the amount of preparation that goes into acting, being able to switch personas and play a different character is pretty astonishing to me. I have seen the movie about and the young actor does a great job of capturing a genius mind locked inside a body.

Question: My question would be when Hawking fell down the stairs for the first time did he know that that was the start to his disease or did he not think twice of it?

Reply

(http

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

10:37am

Originally Posted 2/14/22

Yes, I too am intrigued by the challenges of acting. There's so much power in it, to capture other people's imaginations and to represent another person's entire life. When Hawking fell, I'm sure he didn't think much of it, but I believe there started to be more and more incidences, and so he knew something was wrong. When he first went to the hospital and they spent a week to figure out his diagnosis, after that, they said he would die within a

few years, so it really is a miracle that he lived a very full life. As the movie says, he had a strong will to live and he contributed greatly.

Reply

Naomi Xu (https://canvas.sbcc.edu/courses/46681/users/27955)

Feb 7, 2022

DISCUSSION

I found it really fascinating that Einstein, known for being one of the smartest people to exist, was so stubborn in certain beliefs that it caused him "the biggest blunder of (his) life", and looking back now a lot of information feel like common sense, I imagine it being like the first person to realize we're in a solar system, and then galaxy, and then universe; what if one day we find out that outside our galaxy and so far beyond all the other galaxy combined as well, that we're all in an enormous black hole that contained as all, not the our current ones aren't big already, but because we're so small and don't have the means to, we can't even see it, and then through singularity of that are parallel universes.

QUESTION

I've always been curious about black holes, I'm sure everyone in this class is, that's why we're all here, and sci-fi books, movies, and such always come up with different theories, I would personally love to jump in one, but I would love to hear everyone's favourite theory they've come across, or even your own if you have any, on what's in it, what's at singularity, what's through/ past it if possible.

Reply

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

11:02am

Originally Posted 2/14/22

Very well said. Good response to the question. Exactly correct, not copies.

You'll see Einstein was a bit stubborn in other ways. You will like our discussion of Schrodinger's Cat. Oooh... that was quite a bit of a stir! You can google it to get ahead on this if you want.... haha.

I'm glad you are so curious about black holes! We will be talking a lot about them when the time comes. Still building up our took kit of physics so we can have meaningful discussions.

Reply

Malcolm Tircuit (https://canvas.sbcc.edu/courses/46681/users/427388)

Apr 28, 2022

DISCUSS:

It was really intriguing learning about the beginnings of our universe and how scientists were able to figure out what happened. It was also cool hearing about the expansion/eventual contraction of it. It was interesting hearing and understanding how space is being warped by the expansion of the universe and that's why galaxies are drifting apart and how it will eventually cause the big rip or big crush. Learning about what the so-called shape of our universe is is interesting as well.

QUESTION:

Could the beginning and end of the universe be somehow linked through time or another higher dimension? Almost like the big crunch triggers the big bang. Maybe that's the only way our universe can exist at all... through a sort of paradox. Therefore there would be no need for a higher power or being to create it. It simply exists as a product of itself. I know there is no way to prove this but it's just cool to think about.

Reply

Erin O'Connor (https://canvas.sbcc.edu/courses/46681/users/24247)

11:01am

Originally Posted 2/14/22

Very creative ideas about the universe. Not sure. Maybe you are on to something!

Reply