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This is a graded discussion: 10 points possible

Show Due Dates

D4(BH) Weekly Discussion

Erin O'Connor

Feb 3 at 1:21pm

46

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

Colby Downard (https://canvas.sbcc.edu/courses/46681/users/268882)

Feb 10, 2022

When reading the "Last Three Minutes", the overall consensus about the expanding universe is can be a bit difficult to understand at first. The issue with Olbers' paradox explains that even at night the sky must be illuminated by light due to the proposed infinite amount of stars in the universe. The theory of the cosmos having a finite age with an infinite amount of space is crazy to think about, in my opinion.

QUESTION:

I have two questions starting with how are supposed to know when the cosmos is coming to an end? From my understanding in the readings it is associated the gravity of every body with a substantial amount of mass slowly pulling on each other, or does the hydrogen fuel for stars play a part if it were to run out? Also, is there a way to measure when the endpoint of this finite time will end?

Reply

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

Feb 13, 2022

Hi Colby,

What interesting questions! I will just attempt to answer the second one you asked.

ANSWER:

I would imagine that it would be possible to estimate the end of time if we know at which point the universe reaches thermodynamic equilibrium. In "The Last 3 Minutes" the author states that "all physical activity in the universe tends toward a final steady state of thermodynamic equilibrium or maximum entropy, following which nothing of value is likely to happen for eternity". If nothing is happening or changing I think that this would mark the end of time because we have no way of marking the passage of time relative to anything. I know this reasoning sounds circular but I hope it makes sense!

Reply

(http

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

11:12am

Originally Posted 2/27/22

Thoughtful response, and good question.

Predicting and calculating the beginning of the universe is much easier than predicting the end, because as we have discussed in class the expansion rate is almost exactly balanced by the gravity slowing things down and so it makes it very difficult to figure out even if the universe might be open or closed much less when it would collapse back down if it were to actually close.

Reply

(https:/

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

Feb 13, 2022

DISCUSSION:

I really enjoyed learning about the overlap between what I'd learned in general chemistry courses and the material introduced this week. It was really neat to learn about how different elements came to be during the lecture on "The First 3 Minutes". It had never formerly occurred to me that all of the elements were created over time. I guess I just took for granted that they all came into existence at the exact same time.

QUESTION:

Is it possible or likely that an element might go extinct if the conditions within the universe were just right? If so, I wonder what those conditions would look like.

Reply

(http

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

Feb 13, 2022

ANSWER:

That's a really unique idea, Hana. Fusion converts an atom into a heavier element by gaining protons. That occurs inside of a star (up to Iron) or during a supernova. So fusion would keep atoms moving up in atomic mass on the periodic table to be heavier and heavier elements. Logically, it seems that the lighter elements would start disappearing at some point.

It would be like if you had a bucket of pennies and you started grouping them together to trade into the bank for nickels, then dimes, then quarters, then dollars. At some point, you'll have no more pennies because they would have all been converted, and then at a later point you'd no longer have any coins left, only paper money.

If fusion did stop (which you addressed in your answer to Colby's question) and the universe reached "a final steady state of thermodynamic equilibrium or maximum entropy", then an atom no longer has the means to become a heavier element. So yes, it seems that an element would go extinct (starting with the smallest elements) in the sense that no new atoms of that element would be created. However, atoms that already exist as that element would still exist but would be infinitely stuck in that elemental state without fusion.

Fission converts an atom into a lighter element by losing protons, but (correct me if I'm wrong) this doesn't occur naturally in the universe. So it seems that an atom wouldn't be able to move backwards along the periodic table, which would be like the bank closing indefinitely once you converted all your coins into paper money so that you could never convert it back to smaller increments.

Reply

(http

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

Feb 13, 2022

I think that is a very interesting question and I think that it is possible for elements to go extinct, "Unfortunately, the long-term availability of all three of these critical elements – **gallium, hafnium, and indium** – is in doubt. The American Chemical Society lists nine elements as facing a “serious threat” to supplies within the next 100 years (the other six are arsenic, germanium, gold, helium, tellurium, and zinc)".

https://physicsworld.com/a/endangered-elements/

Reply

(http

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

Feb 13, 2022

Wow, thank you for sharing this.

Reply

(https:/

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

Feb 13, 2022

DISCUSSION:

These are just mind-boggling concepts and I absolutely love that scientists sit and ponder these things and then have the bravery to go public with outlandish ideas that might go against the science of their day.

QUESTION:

In The First Three Minutes, I just can't wrap my head around the idea that SO much happened in such as short amount of time. Not only the rapid expansion, but the rapid cooling as well. A dense cosmic soup decreasing in temperature from 30 thousand million degrees to 10 thousand million degrees in just 1 second doesn't seem possible. Where did all that heat go?

Reply

(http

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

Feb 13, 2022

Hi Sarah,

From what I understand the heat was dispersed. Due to the rapid expansion, I believe that the heat was able to be spread out in a larger space so it became cooler due to less energy being in a single place.

Reply

(http

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

Feb 13, 2022

ANSWER

Hi Sarah,

Since the universe works, it is a highly complex question, so it is tough to know what is happening and what will happen precisely. I am not a hundred percent secure. Of this answer, but I will have to agree with Luke, and it is that all this heat was dispersed very fast.

Thanks, and I hope you enjoy this class as I am doing!

Reply

(http

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

11:19am

Originally Posted 2/27/22

So many great ideas going here. In office hourse we can delve into some of your thinking more deeply. It's great to see your energy and enthusiasm for science. I myself have found science to be incredibly rewarding and studies have shown that people who go into science feel that their lives are meaningful and they enjoy their work and that it can be very rewarding. That doesn't mean that there aren't boring jobs, but you will find a larger selection to pick from and you can pick the jobs you like.

Reply

(https:/

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

Feb 13, 2022

DISCUSSION:

I find interest in how determined scientists are to figure out the origin of the universe in such detail. It is mind-boggling how detailed the description is of what particles are found in such a small space during and short time. Working out the temperature drops within one-tenth of a second and so on seems unfathomable to me.

QUESTION:

If the standard model has been used to test theories by working out their consequences through the model in the past decade, does that mean those new theories and hypotheses could all be untrue if contesting evidence against the standard model is found?

Reply

(http

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

Feb 13, 2022

ANSWER

Hi Luke,

It is an exciting and complicated question. I think we don't have a hundred percent of security in all hypotheses and models we create; after all, we are all humans, and the only way to know that, is trying and proving by experiments if we are wrong or not like it has been done through all these decades. So the only thing we can do is let the time pass, and by having more advantages, we can be more secure every day if they are right or not.

Thanks!

Reply

(http

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

11:17am

Originally Posted 2/27/22

Yes it's amazing how accurately scientists have been able to figure out what happened in such minute time frames since the beginning of the universe. Your question about what would happen if some evidence was discovered that went against standard model, well that's the principal of science. We can't prove a theory right, but we can quickly and easily disprove a theory with evidence that contradicts our predictions. This has happened with the Copernican Revolution and when Einstein develop his theories of Relativity. But in both these cases the new theories were able to conceptually describe things differently but the experimental results from the old theories were pretty accurate and so the new theories didn't change that (for the most part). For example, we still use Newtonian physics to send rockets to the moon. It certainly can happen in the future where new theories will develop and we will have to change our thinking but our current experimental results are in close agreement with theory especially in the fields of quantum mechanics and relativity. So whatever changes occur they may not be as dramatic as what has happened in the past, but of course only time will tell.

Reply

(https:/

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

Feb 13, 2022

I really had no idea that it took 300,000 years after the big bang for the universe to cool down enough for a stable atom to form! I had never even heard anything about the universe being opaque for so long. I feel like the universe starting out as super-hot plasma is something I should have known before haha. But it's interesting to learn about it for the first time, I guess!

QUESTION:

I can't quite make the connection between the CMB (the cosmic microwave background radiation) and the universe becoming transparent. Can someone explain or point me in the direction of an explanation as to how this leftover radiation was caused by the moment light was able to pass through the universe?

Reply

(http

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

Feb 13, 2022

As far as I understand it, up until 380,000 years after the big bang, the universe was so dense and hot that there basically was no way for photons to pass through it without interacting with other parts of the plasma. As things cooled, the stuff in the plasma could start to clump together into more stable matter, giving space for photons to get through. This meant that the universe was no longer just a uniform mass of plasma. I think the CMB is just the first light that was able to get through the plasma as that more stable matter was being formed. The variations in the CMB are very small (10^{-5} K) so this really was just when there was enough variation for photons to get through. Previously, there was no space for photons to move through so there was no CMB.

I found these sites helpful:
https://www.universeadventure.org/big_bang/cmb-origins.htm#:~:text=The%20first%20light%20radiated%20after,all%20matter%20existed%20as%20plasma.&text=As%20a%20result%2C%20the%20universe,bind%20to%20nuclei%2C%20forming%20atoms
(https://www.universeadventure.org/big_bang/cmb-origins.htm#:~:text=The%20first%20light%20radiated%20after,all%20matter%20existed%20as%20plasma.&text=As%20a%20result%2C%20the%20universe,bind%20to%20nuclei%2C%20forming%20atoms) .

https://www.cfa.harvard.edu/research/topic/early-universe#:~:text=For%20nearly%20400%2C000%20years%2C%20the,limited%20information%20about%20that%20period (https://www.cfa.harvard.edu/research/topic/early-universe#:~:text=For%20nearly%20400%2C000%20years%2C%20the,limited%20information%20about%20that%20period) .

https://courses.lumenlearning.com/astronomy/chapter/the-cosmic-microwave-background/ (https://courses.lumenlearning.com/astronomy/chapter/the-cosmic-microwave-background/)

Reply

(http

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

11:10am

Originally Posted 2/27/22

Nice thoughtful response, and good question.

During office hours we can talk more about the CMB, and how that picture is of the moment that the Universe becomes transparent about 380,000 years after the big bang. The way to think about it is that as we look further and further in space, you're looking further and further back in time so you eventually reach a distance where if you go any further the universe is no longer transparent. So that is what the picture of the CMB is all about. It's that moment in time where the universe is no longer transparent.

Reply

(https:/

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

Feb 13, 2022

DISCUSSION

The part I found more interesting of all the material that was assigned for this week is how the scientists work every day with theories and dedicate most of their life to discovering new things; like it might be the beginnings of our history, how the universe is created, how it expands every day, etc. I appreciate all these guys; they make an excellent job of going out with some incredible ideas and theories that we might never think of it.

Question

I have a different question for this week since we have seen many universe theories. Do you think you might like me to work as a scientist and spend most of your life trying to know how everything started?

Reply

(http

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

Feb 13, 2022

Hello Franco,

I personally love learning about science and the universe, but I don't think that I could make that my career. I'm currently a film and video major, but in the future I would like to keep learning as much as I can and incorporate it into the career I do have in the future! I think that the people who do decide that to be their career are awesome for dedicating time to making important discoveries for the whole world.

Reply

(http

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

Feb 13, 2022

Hi Franco! I think personally working as a scientist and spending my life trying to figure out how the world started would be a bit redundant, as personally I'd rather focus on the present for at least a large portion of my life.

Reply

(http

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

11:14am

Originally Posted 2/27/22

Being a scientist and studying very abstract and complicated topics is not for everyone. Some people are more grounded and interested in interacting with people. that's why we have so many different careers and jobs and interesting things to do. But at least in this class you're being exposed to some of the ideas and some of the people that have changed our understanding of science. Hopefully that will make for good subject matter for future conversations you will have with others in the future.

Reply

(http

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

Feb 13, 2022

Hi Franco, I spent 20 years working in marketing, business administration, and nonprofits, and now I'm changing direction. I do want to be a scientist. I think it's becoming more common to have multiple careers over the course of a lifetime. Some people don't understand why I'd go back to school when I've been successful in other areas. But those areas aren't challenging or interesting to me anymore. I likely have at least 25 more working years ahead of me. So I'm hoping to work in science as it does challenge me. Follow what motivates you! :)

Reply

(http

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

Feb 15, 2022

I would personally get freaked out by the answers I would find. I feel safer personally not knowing, I would go down a deep rabbit whole I could not climb out of.

Reply

(http

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

11:11am

Originally Posted 2/27/22

I like your question for others, encouraging them to think about what they would want to do if they were to become scientists and what they would want to study and whether they feel it would be an interesting and rewarding career.

Reply

(https:/

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

Feb 13, 2022

After reading "The First Three Minutes", I learned about the creation of the elements which is something that I've never questioned before. I took 2 chemistry classes in high school and we never talked about how they came to be, I think it's really interesting that they were all made

over time. I know that they were all discovered at different times and there are more being found today but the fact that they weren't all here at the same time is pretty cool.

My question:

When we discovered the foundational elements how far apart were they discovered and when were they discovered?

Reply

(http

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

11:15am

Originally Posted 2/27/22

Good questions. Seems like you have an interest in chemistry and so now you're getting to learn where the elements have come from. There's been a long-standing tongue-in-cheek debate between physicists and chemists as to which field of science is larger, grander and more important. I as a physicist will tell you that it's physics because chemistry is just a small subset of the field, just the electromagnetic interactions of outer shell electrons in atoms. But of course, the chemists will tell you that chemistry is the underlying basis of all life processes, so certainly that's very important to us humans as well.

Reply

(https:/

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

Feb 13, 2022

This weeks readings and lectures were very interesting. It is definitely a mind boggling concept about how fast everything happened in the first three minutes!

QUESTION:

With the theoretical knowledge that we have about the first three minutes and the last three minutes of the universe, will it ever be possible to find out exactly where we are on the timeline of the universe?

Reply

(http

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

Feb 13, 2022

Hey Lex, your question is interesting to think about! I feel like this is something that can't necessarily be exact because with space, I'm not sure that you can realistically be absolutely certain about anything. So in this case everything is really just based on an estimate such as how the Universe is about 13.8 billion years old and the Earth is 4.5 billion years old. Given that scientists were able to figure out things such as the expansion rate of the Universe and even the age of the Universe, I feel like it could be possible to figure out where we are on this cosmic timeline if we could estimate when the Universe may come to an end.

Reply

(http

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

11:16am

Originally Posted 2/27/22

It's difficult to determine where we are in the timeline because as we've discussed previously the universe's expansion is closely balance by the gravity that's trying to slow everything down and so scientists can't even tell if the universe will be open or closed. For this reason it's very hard to say where we are in the timeline because it could be potentially infinitely long.

Reply

(http

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

11:16am

Originally Posted 2/27/22

Since these classes are introductory, there's no expectation that any of the students in the class become scientists. I like to introduce real scientists to the class because students are sometimes trying to figure out what exactly they want to do with their lives. Most of our students do not become scientists, but many will take the ideas they learned in these classes and incorporate them in their work, or personal interest in life. An example of how an understanding of some of these concepts could be helpful to you since you are a film and video major, is if you were to someday produce or to act in a film that depicts a famous scientist, or a historical story about science, or even if it's a science fiction film about a futuristic society and what is happening in the future or on a different planet or out in space. What you learn in this class can help you develop a more realistic plot, or for you to act out the storyline more effectively.

Reply

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

Feb 13, 2022

DISCUSSION

One of the most fascinating things about this week's material is the unimaginably extreme conditions of the early universe. One hundred billion degrees Celsius and four billion times the density of water is so extreme that those numbers are almost meaningless in trying to imagine what those conditions were like. The fact that so much happened so quickly is also mind boggling. The fact that we can even talk intelligently about the very early beginnings of the universe, an event that took place nearly 14 billion years ago, is incredibly impressive and a testament to how far our understanding has come in just last century. It's almost as hard to envision the end of the universe, assuming time's arrow continues as we predict. The juxtaposition between the hot, dense, and violent beginnings of the universe and the cold ends found in thermodynamic equilibrium are both poetic and more than a little depressing.

QUESTION

In our reading about the first three minutes of the universe, I am having trouble wrapping my head around how time even works in that environment. We know that time is altered by gravity such as around black holes, as well as by speed. Since time is relative, it makes a sense that we could still reasonably measure time, even in such extreme environments. However, I would think that those extreme environments will vary dramatically depending on how close a particular area was to the gravitation "center" of the early universe. Is it still meaningless to talk about a gravitational center, even so close to an expansion that I would think would be considered the center of the universe? If not, are things on the edge of the universe experiencing time dramatically different than those closer to the center? Since time is movement through space, how does the rapid expansion of space influence what is meant by the first three minutes of the universe?

Reply

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

Feb 14, 2022

ANSWER:

I had a similar thought about time during those early moments. Our math tells us what happened in the first 3 minutes, but maybe time was actually passing extremely slowly

within the cosmic soup. Maybe it could have taken a billion years if we were inside that soup, but from the outside looking in it appears to be a short timeframe.

Reply

(http

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

11:20am

Originally Posted 2/27/22

Really great comments and thoughtful responses. It is really impressive how intense and dramatic the conditions of the early Universe were. But we try to understand from the perspective of us on the earth, and the anthropic principle can be deceiving. For example, the most common state of matter in the universe is plasma, but for us here on Earth we see very little of it and we think the whole universe is mostly solid liquid and gas. So it's pretty impossible for us to relate to the conditions of the early universe, but the science behind it is inescapable. If all the galaxies are flying apart, well they must have all been together at some point in the past. Science can go through the mechanics of how, but we can't really understand why. maybe in the future we will learn more and things will become clearer even earlier in the history of the universe. Gravitational wave detector promise just that. These new observatories will allow us to view further in the past than the 380,000 CMB limit that we currently have.

Reply

https:/

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

Feb 13, 2022

DISCUSSION:

While reading "The Last Three Minutes", I thought it was very interesting when the topic of thermodynamic equilibrium was discussed. When this was first mentioned, I immediately began thinking about this concept in terms of the Universe and how come the universe wouldn't just eventually reach this state. But reading on, this idea was talked about which I thought was very interesting to read. It makes sense that if there's theoretically an infinite number of stars that are pouring out radiation into the Universe, and if that radiation would eventually be absorbed into nearby and distant stars, wouldn't the Universe as a whole begin to reach equilibrium. Or as it was stated, "...the intensity of the radiation will rise until an equilibrium is established at which the rate of emission just balances the rate of absorption."

QUESTION:

So then I guess my question is an expansion on the idea that there would eventually be an equilibrium within the Universe at a future point in time. So theoretically, if there could be thermodynamic equilibrium in the Universe, how long would it take to reach that point? Or would the Universe die before that could even happen?

Reply

(http

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

Feb 15, 2022

I feel that the earth would die out or something catastrophic would happen before the cooling of the universe.

Reply

(http

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

11:13am

Originally Posted 2/27/22

Good questions. Predicting and calculating the beginning of the universe is much easier than predicting the end, because as we have discussed in class the expansion rate is almost exactly balanced by the gravity slowing things down and so it makes it very difficult to figure out even if the universe might be open or closed much less when it would collapse back down if it were to actually close.

Reply

(https:/

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

Feb 13, 2022

Reply

(https:/

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

Feb 14, 2022

Discuss:

The notion that time and space only exist inside the universe is incredible to me. The fact that outside of the universe there is no space is so interesting to ponder. Through reading about the first 3 minuets (and 40 seconds) I was completely stunned by how far humanity has come in even beginning to understand the complexities of the cosmos. This makes me super exited for what new discoveries will come about in my lifetime.

Question:

I have not fully understood how scientists know what happened in the first 3 minutes of the universe down to a fraction of a second. It seems almost impossible to come by that information.

Reply

(http

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

Thursday

We can't, to my understanding, that's why it's still just called the Big Bang "Theory" and not a scientific law yet even though it is agreed upon by most people.

Reply

(https:/

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

Feb 15, 2022

Some Thing I found very interesting was in the reading material, I was reading through "The Last Three Minute's" and this interesting topic about Entropy came up. Talking about how Heat flow is unidirectional, and it is the equivalent of watching rain drops rise to the clouds instead of falling it reached my attention when it talked about how entropy could relate to the possible demise of the universe. The expert talked about how eventually the suns heat outflow is stretching for billions of lightyears but still can be exhaustible, the sun will eventually run out of fuel and cool until it reaches the same temp of its surrounding.

My question is can the Entropy of the universe Rise forever or will it eventually all cool to one temp?

Reply

(http

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

Thursday

My understanding of it is that eventually the universe will reach an equilibrium and from that point on nothing will change. This is one of the many theories to how the universe will end.

Reply

(http

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

11:13am

Originally Posted 2/27/22

Great questions. And yes, it can seem a bit like going down a rabbit hole. But if we don't go down a bit, we may not learn much or discover things that can be helpful to us humans in the short-term even though we're trying to learn about the long-term.

Your question about entropy rising forever, this is a real challenging question. Because you see, if the universe is closed, and this will be a topic of discussion in a later chapter, then entropy in principle should reverse because you're going to take the very large and entropic universe and crush it down to a point which is very orderly and therefore entropy must decrease which is in a sense a violation of the laws of thermodynamics. And if entropy is considered the arrow of time, then does that mean that time will go backwards? Oh so many interesting things to think about and discuss later in the semester.

Reply

(https:/

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

Tuesday

The Viking story reminded me of a Chinese fairy tale (?I'm actually not sure what these types of stories are called) of how our world became. It was said that there was this giant who was sleeping in this vast primordial chaos, and when he woke up he felt it was too dark so he axed the "sky" (or space I guess) as hard as he could and it split. With light coming through the cut, it split into sky and land, the giant was so tired that he fell unto the land and became everything in nature.

Reply

(http

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

Thursday

QUESTION

What's your culture's (or favourite) tale of the origins of the universe?

Reply

(http

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

Thursday

About cultural (or favorite) tale of origin,... I'm still a fan of the tower of tortoises.

Reply

(http

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

11:24am

That's a great story. Every culture has creation myths, or stories of how they came to being and that give purpose and meaning to life. The Far East cultures and stories are so rich with symbolism, meaning, and depth. I love hearing these stories. Thank you for sharing.

Reply