Debate Arising from James Webb Space Telescope

Post by “Cassius” of August 25, 2022 at 8:10 AM

I have no way to evaluate the credibility of this other than that the argument does not appear to be religious based and seems to be occurring within the scientific community. The article points to other sources including a book on the topic.

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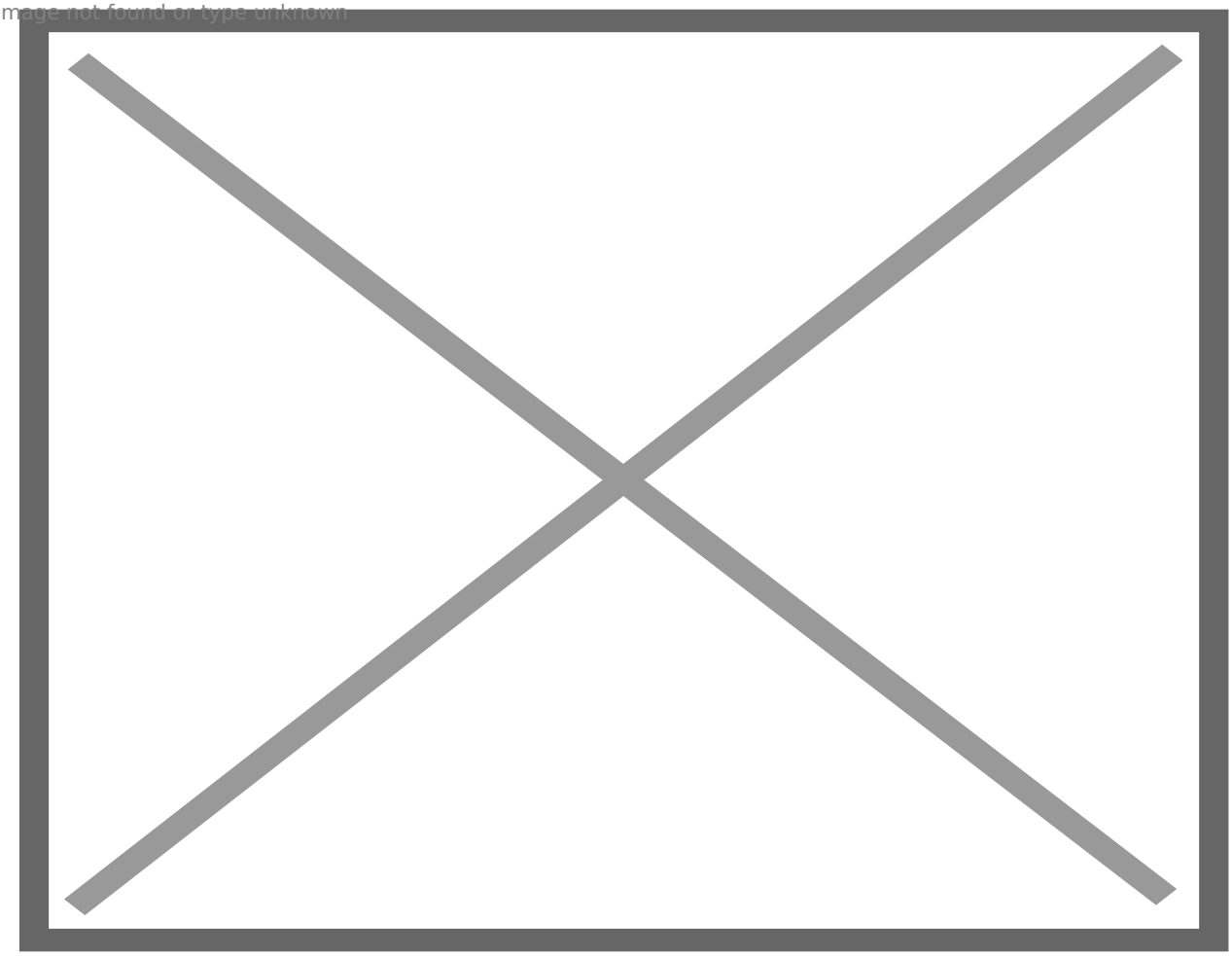

[The Big Bang didn't happen | Eric Lerner]

The Big Bang Hypothesis - which states the universe has been expanding since it began 14 billion years ago in a hot and dense state - is contradicted by the…

iai.tv

Post by “Don” of August 25, 2022 at 8:24 AM

Webb does not debunk the Big Bang... This video cited that exact article...

https://youtu.be/1S2CxPUZDOY

"This is simply not true. The JWST has not provided evidence disproving the Big Bang theory, and cosmologists aren't panicking. Why, then, are we seeing viral social media posts and funky headlines that suggest the Big Bang didn't happen at all?

To answer that question, and show why we should be skeptical of claims like this, we need to understand where the idea came from."

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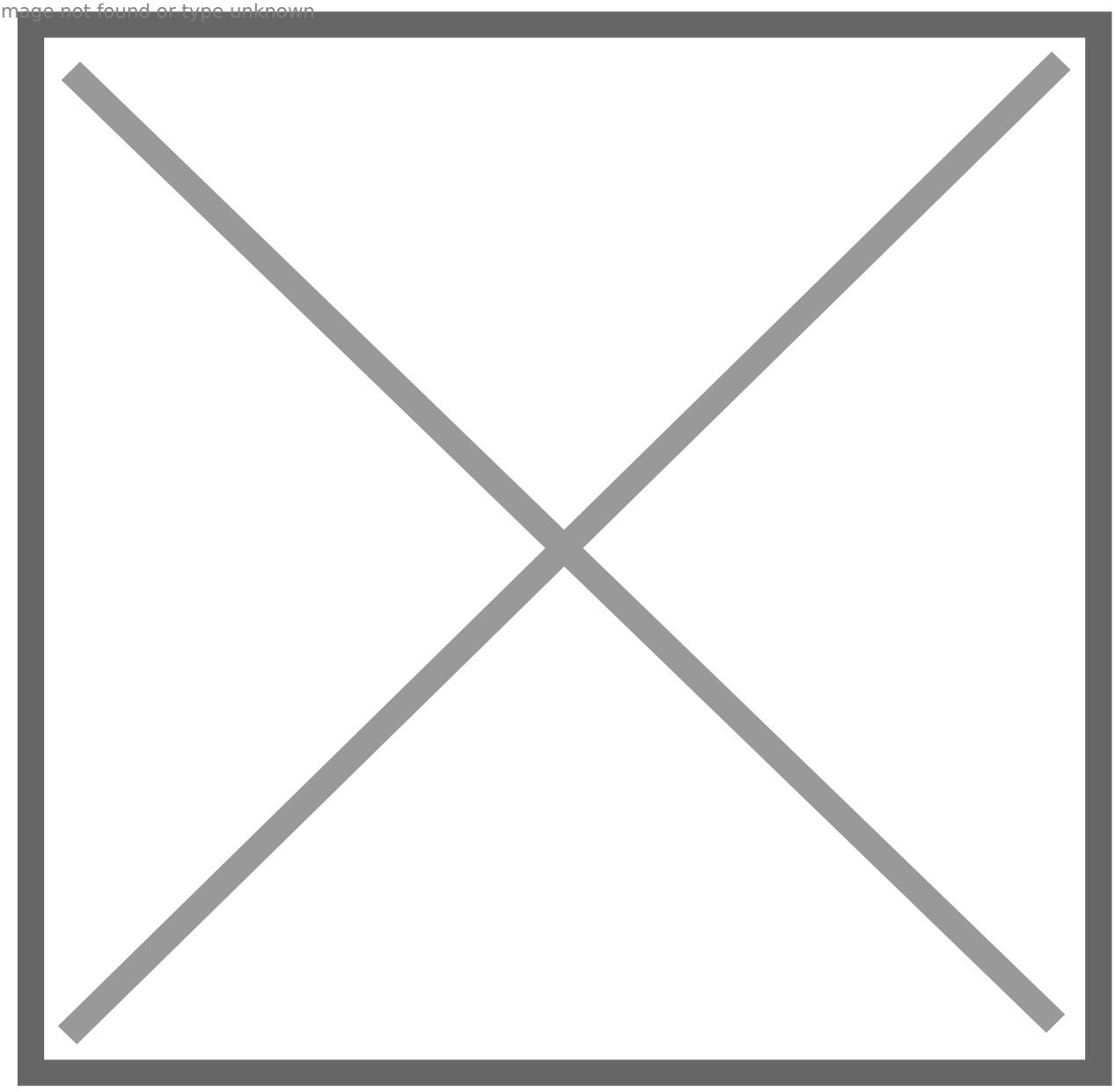

No, James Webb Space Telescope Images Do Not Debunk the Big Bang

The JWST provides an intriguing look at the early universe, but it's not yet rewriting fundamental theories of the cosmos.
www.cnet.com

Post by “Cassius” of August 25, 2022 at 8:32 AM

It will be interesting to get feedback from Martin as the debate proceeds in the scientific community!

This is probably a good example of a field in which lots of caution and consideration of multiple possibilities even "waiting" is appropriate.

Post by “Don” of August 25, 2022 at 8:52 AM

Yes, I'd like to hear from Martin. I get the impression it's not really much of a debate within the scientific community. This article seems to be more a sensational journalistic angle. Plus the article's author is an anti-big bang proponent to begin with. It's not like the JWST data revealed the big bang didn't happen. The researcher could be cherry picking.

Post by “Godfrey” of August 25, 2022 at 12:19 PM

> Quote
>
> Lerner's piece uses some of the early JWST studies to attempt to dismiss the Big Bang theory. What's concerning is how it misconstrues early JWST data to suggest that astronomers and cosmologists are worried the well-established theory is incorrect. There are two points early in Lerner's article which show this:
>
> He points to a preprint with the word "Panic!" in its title, calling it a "candid exclamation."He misuses a quote from Allison Kirkpatrick, an astronomer at the University of Kansas.

> The first point is just a case of Lerner missing the pun. The full title of the paper is "Panic! At the Disks: First Rest-frame Optical Observations of Galaxy Structure at z>3 with JWST in the SMACS 0723 Field." The first author of that preprint, astronomer Leonardo Ferreira, is clearly riffing on popular 2000s emo band Panic! at the Disco with his title. It's a tongue-in-cheek reference, not a cosmological crisis.

This first point is rather amusing, but also a good example of how misinformation gets started.

Post by “Don” of August 25, 2022 at 12:36 PM

> Quote from Cassius
>
> This is probably a good example of a field in which lots of caution and consideration of multiple possibilities even "waiting" is appropriate

It could also be an example of someone not wanting to accept the preponderance of evidence and wanting to cling to an "alternative" pet theory.

Post by “Godfrey” of August 25, 2022 at 12:46 PM

That's what it appears to be, based on the CNET link.

Post by “reneliza” of August 25, 2022 at 2:45 PM

> Quote from Don
>
> > Quote from Cassius

> This is probably a good example of a field in which lots of caution and consideration of multiple possibilities even "waiting" is appropriate
>
> It could also be an example of someone not wanting to accept the preponderance of evidence and wanting to cling to an "alternative" pet theory.

I think that if we DID have a situation where a long established theory with such a large amount of support and evidence to date was undeniably, irrefutably disproven... Yes, scientists would be terrified, but they'd also be super excited. That's what nerds do. We love any good data even if it disrupts our deeply held beliefs and shakes us to the core and quite frankly makes us want to vomit lol

People with alternative theories love to talk about The Real Truth They Don't Want You To Know but if there's one thing scientists can't shut up about it's new evidence that challenges classical understanding!

Post by "Martin" of August 25, 2022 at 3:24 PM

Here is my understanding from occasionally reading articles from cosmologists and astrophysicists for other physicists:

The data we have are best described by expansion from something what was at least similar to a Big Bang.

Some of the difficulties are:

Simply extrapolating the observations back leads to a singularity, i.e. energy density and mass density were infinite, from which the universe started in some sort of giant explosion. That is why that singularity was called Big Bang. In this simple extrapolation, time started with that singularity. However, at that time and until a tiny fraction of a second after the singularity, the conditions were such that our known laws of physics were most likely not valid. So a Big Bang in the strict sense of that singularity might indeed not have happened because the extrapolation to the singularity itself is invalid. That opens ways to speculate about a time before the point in time of the nominal singularity. However, we have no data to support these speculations.

Photons could not escape from the very dense matter of the early universe. No matter how good our optical telescopes become, that most interesting early universe will remain optically

invisible. We may have a better chance to get closer with other methods, e.g. gravity waves.

Alan can probably explain this more accurately and in more detail.

Post by “Pacatus” of August 26, 2022 at 1:08 AM

Martin

“In this simple extrapolation, time started with that singularity. ... That opens ways to speculate about a time before the point in time of the nominal singularity. However, we have no data to support these speculations.”

I understand the point about having no data to support such speculations, but any such data would peel back the singularity itself, would it not? And any speculation about “a time before time” seems to me to be logically incoherent. Why not just accept the epistemological limitations implied by the singularity? Until there may be, in fact, actual data that peels it back?

EDIT: I don't think I'm arguing here -- just asking questions that I suspect are in general agreement with your understanding.

Post by “Cassius” of August 26, 2022 at 7:59 AM

I think Pacatus you have raised the real issue underlying the question - which includes the relationship and use of both direct evidence and "circumstantial" or "indirect" evidence.

Epicurus has no direct observational evidence of atoms or void, but he found strong circumstantial evidence from the observation of other things which he could observe directly. We therefore logically do not require direct evidence on all issues, but we require that any theories be consistent with what evidence does exist.

So when we use words like speculation and evidence we have to be very clear what we are talking about.

As I see it there is a LOT of circumstantial evidence from all else that we observe that "nothing comes from nothing..". We do not have direct evidence of what came before the "big bang" (which itself we infer from circumstantial evidence as we did not see it occur).

It is my personal position that the overwhelming evidence of nothing coming from nothing in all other observations is not invalidated as a good working model of the universe as a whole by the argument that "we have no direct evidence of what came before the big bang."

These are complicated epistemological issues that cannot be resolved purely by demanding "direct evidence* from our own observation. In order not to be accused of blind faith ourselves we have to have an understanding of our own rules of reasoning and waiting and opinion making as in the PDs in the early 20's

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Post by “Cassius” of August 26, 2022 at 9:56 AM

I am going to run out of time for comment right now but these issues also involve the question of "reasoning by analogy" and the issues discussed in Philodemus On Signs / On Methods of Inference

Part of the reason for my own position would also involve the "Nature never creates only a single thing of it's kind" deduction. We have loads of analogies to things which pulsate and go back and forth, but the suggestion that there was once a one-of-a kind event is not made more plausible to be unique by calling it a "singularity"

At the very least this would cause me to deduce an unending series of big bangs, but at the same time I do not accept the plausibility of the universe not being infinite in size, so I do not believe it plausible that the universe can collapse on a "center".

So my own view which is admittedly my own view and nothing more is that the most likely scenario given present observations is an unending series of bangs in unending number throughout an "infinite" space (not sequentially around one center).

I am sure that will get you an F in physics class but that is my personal deduction that I am willing to live my life by given my current reading to date..

And of course that comment raises the issue of how we deal with "experts" and questions of "scientific consensus" and all that, which Ren mentioned above. That in itself is worth a long discussion.

Post by “Don” of August 26, 2022 at 10:15 AM

I find this line of thinking interesting...

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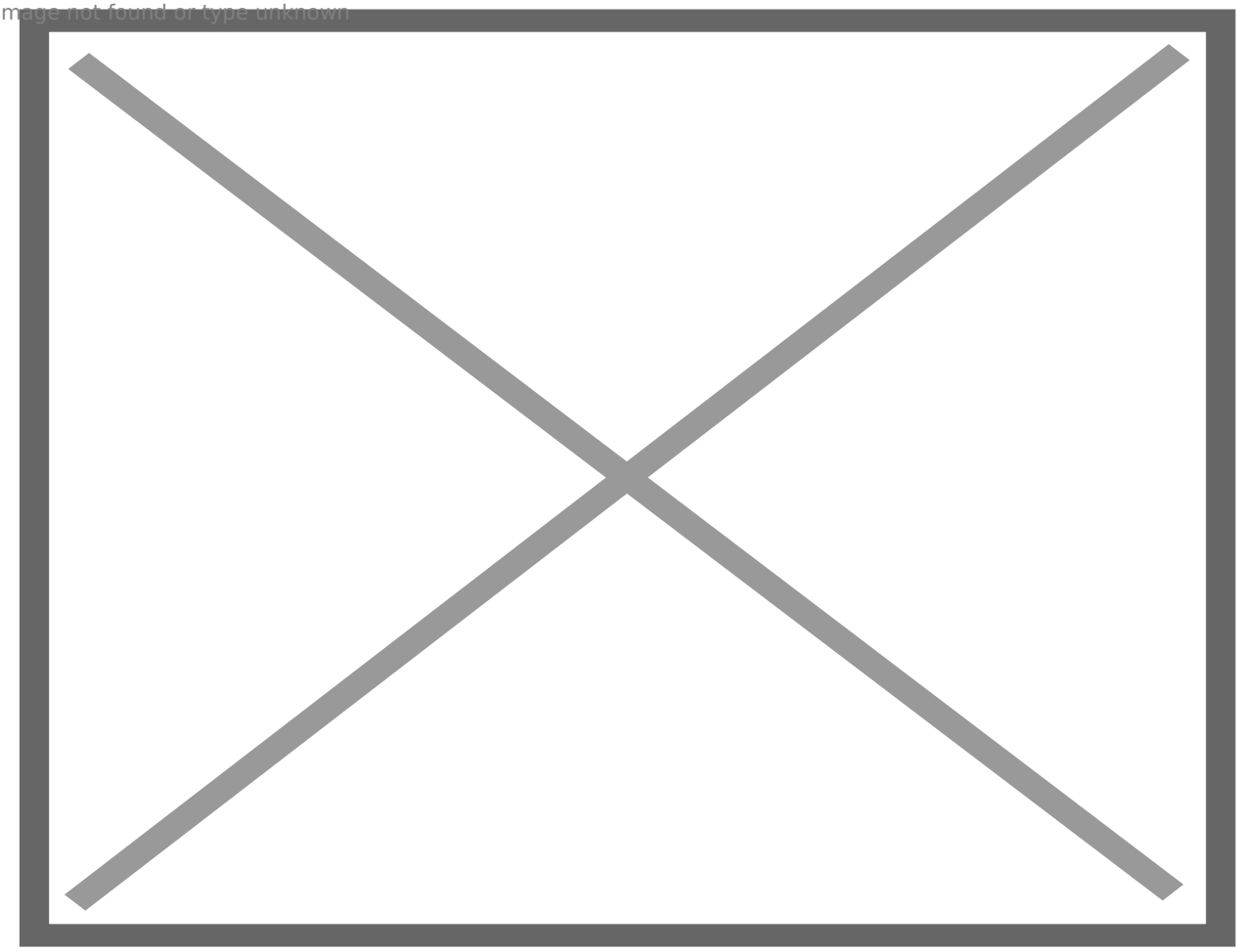

[Ask Ethan: Will The End Of Our Universe Give Rise To A New One?]
Has all this happened before, and will all this happen once again?
www.forbes.com

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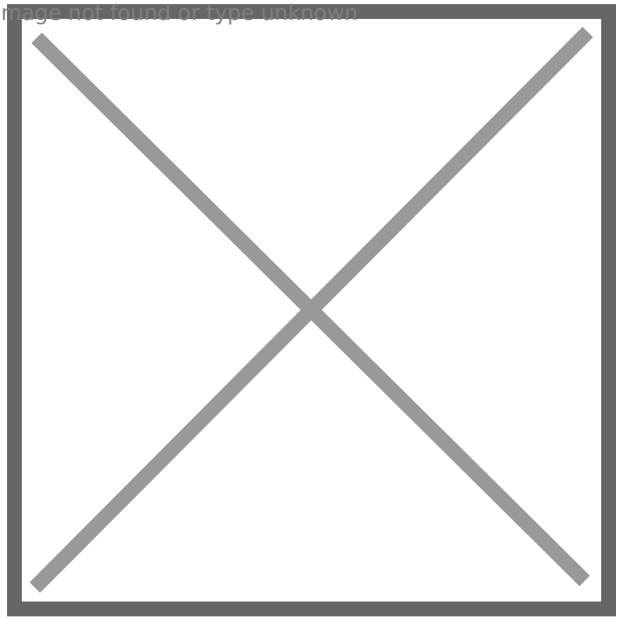

[Is heat death reversible by thermal or quantum fluctuations given an infinite time?]
I'm new here, so apologies if the question doesn't sound meaningful considering what physics is supposed to answer. I don't have a physics or mathematics…
physics.stackexchange.com

Post by “Martin” of August 26, 2022 at 4:32 PM

"... any such data would peel back the singularity itself, would it not?"

Such data would tentatively indicate that the singularity did not happen.

"Why not just accept the epistemological limitations implied by the singularity?"

Because there is no evidence that the singularity did happen. The extrapolation implying the singularity is invalid.

We can use an analogy from gravity:

The simple theory of a mass m at distance r from a mass M results in the potential energy V = -G * M * m / r with G as gravitational constant. This potential energy has a singularity at r = 0, i.e. when the position of both masses is the same.

The more accurate theory takes into account that the masses are not points but objects with an extension. Once mass m dives below the surface of mass M, the potential energy is V = -a + b * M * m * r * r for a homogeneously distributed mass M and constants a and b and has no

singularity.

If we eventually figure out the modified laws of physics for the early universe, then we can extrapolate more accurately and will probably not obtain a singularity, similar to the example with m and M.

Post by “Kalosyni” of August 27, 2022 at 8:26 AM

> Quote from Cassius
>
> Epicurus has no direct observational evidence of atoms or void, but he found strong circumstantial evidence from the observation of other things which he could observe directly. We therefore logically do not require direct evidence on all issues, but we require that any theories be consistent with what evidence does exist.

Just an aside here -- of what might have caused the theory of atoms -- "visual snow" --

"Visual snow (VS) is a form of visual hallucination that is characterized by the perception of small, bilateral, simultaneous, diffuse, mobile, asynchronous dots usually throughout the entire visual field, but it can be partial, and it is present in all conditions of illumination, even with the eyes closed." -- which is listed as an eye disorder.

However -- it could come on during states of meditation.

Post by “Don” of August 27, 2022 at 12:08 PM

Fascinating

Visual snow - Wikipedia