



WHY IS THE UNIVERSE FINE- TUNED FOR LIFE?

REASONABLE FAITH

BALANCED ROCKS

IMAGINE WALKING ALONG A STREAM IN THE WOODS. YOU COME UPON A CAIRN OF STONES CAREFULLY BALANCED UPON EACH OTHER. EVEN THOUGH, THESE STONES ARE NATURAL OBJECTS, WHAT WOULD BE THE MOST REASONABLE CONCLUSION RESPECTING THEIR ARRANGEMENT?



MAYBE IT WAS...

NECESSITY

Maybe a yet-to-be discovered force of nature compelled these stones to arrange themselves exactly in this way.

CHANCE

Maybe the stream flooded and in the aftermath of spilling over its banks, the stones were arranged like this by chance.

DESIGN

Maybe someone had a purpose in mind. That's why the stones were arranged like this.

HOW MIGHT WE TELL?





The Fine-Tuning Argument

A DEFINITION

By “fine-tuning” we mean that in order for life to exist in the universe, the ingredients (fundamental constants) that cooked up our universe had to be measured out in just the right proportion. Too much of one or too little of another would have rendered life to be impossible.

The Fine-Tuning Argument says that God is the best explanation for such precision.

THE UNIVERSE IS FINE-TUNED FOR LIFE



Think of it this way. If you wanted to bake a cake, you would need to pay attention to a couple important elements of cake baking.

First, you would need all the right ingredients. And you would need to have the right amount of each ingredient. Too much or too little flour and the cake would be ruined. The same goes for the salt, sugar, baking powder and eggs,

Then, you would need to combine and cook your ingredients in the right way. Too much or too little time in the oven and everything could be ruined.

The same goes for cooking up a life-permitting universe. You need both the right ingredients and the right procedure to end up with a habitable environment.

THE UNIVERSE IS FINE-TUNED FOR LIFE

The 4 Fundamental Constants



GRAVITATIONAL FORCE

The attraction between two objects with mass or energy



WEAK NUCLEAR FORCE

It's responsible for particle decay and how one type of subatomic particle changes into another.



ELECTROMAGNETIC FORCE

This acts between charged particles, like negatively charged electrons and positively charged protons.



STRONG NUCLEAR FORCE

This binds the fundamental particles of matter together to form larger particles.

These, plus 22 fundamental additional constants, play an important part in cooking up our universe



One Ingredient

GRAVITY

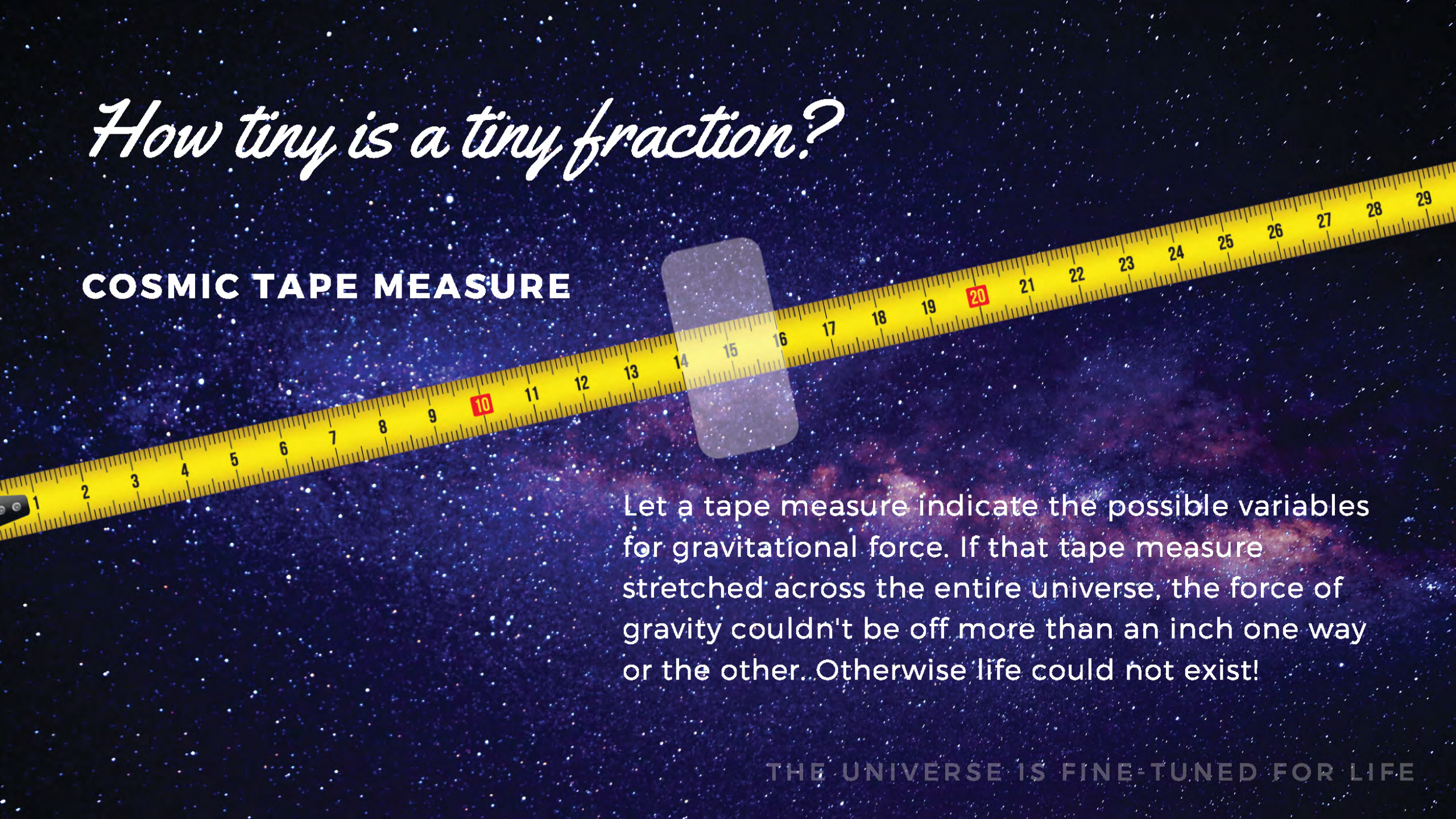
ONE OF THE FOUR FUNDAMENTAL
FORCES OF NATURE

...if we change gravity by even a tiny fraction of a percent—enough so that you would be, say, one billionth of a gram heavier or lighter—the universe becomes so different that there are no stars, galaxies, or planets. And with no planets, there would be no life.

<https://biologos.org/common-questions/what-do-fine-tuning-and-the-multiverse-say-about-god/>

How tiny is a tiny fraction?

COSMIC TAPE MEASURE



Let a tape measure indicate the possible variables for gravitational force. If that tape measure stretched across the entire universe, the force of gravity couldn't be off more than an inch one way or the other. Otherwise life could not exist!

THE UNIVERSE IS FINE-TUNED FOR LIFE



Another Ingredient

WEAK NUCLEAR FORCE

ONE OF THE FOUR FUNDAMENTAL
FORCES OF NATURE

A change of only one part out of 10^{100} at the time of the initial formation of the universe would have prevented a life-permitting universe from forming.

How precise is that?

TRY HITTING THIS TARGET

You would have better odds of shooting a bullet across the universe and hitting a postage stamp, than calibrating the weak nuclear force by chance.



THE UNIVERSE IS FINE-TUNED FOR LIFE



Yet Another Ingredient

INITIAL ENTROPY OF UNIVERSE

THE UNIVERSE IS BECOMING MORE
DISORGANIZED OVER TIME

At the beginning, the universe was extremely ordered. Roger Penrose of Oxford University has calculated that the chance of this low-entropic state spontaneously coming into existence by chance is one in approximately $10^{10^{123}}$!



What are the chances?

THEM AIN'T VERY GOOD ODDS

If you were blindfolded and every particle in the universe—every atom, neutron, proton, electron, etc.— was a white ping-pong ball except one, you would have a better chance of finding the one colored ball than this low-entropic state of the universe happening by chance.

THE UNIVERSE IS FINE-TUNED FOR LIFE



“

**WELCOME
HOME**

The more I examine the
universe and the details of its
architecture, the more
evidence I find that the
universe in some sense must
have known we were coming.

FREEMAN JOHN DYSON, PHYSICIST

WELCOME

The Fine Tuning Argument

HAS THREE PARTS



The fine-tuning of the universe is due to either physical necessity, chance, or design.

...



It is not due to physical necessity or chance.

...



Therefore, it is due to design.

Step One

NECESSITY, CHANCE & DESIGN EXHAUST THE POSSIBILITIES



...



...



The fine-tuning of the universe is due to either physical necessity, chance, or design.

It is not due to physical necessity or chance.

Therefore, it is due to design.

Necessity?

IS THE FINE-TUNING DUE TO
PHYSICAL NECESSITY?

The person who maintains that the universe must be life-permitting is taking a radical line which requires strong proof. But there is none; this alternative is simply put forward as a bare possibility.

Craig, William Lane. Reasonable Faith (3rd edition) (p. 162). Crossway. Kindle Edition.

THE UNIVERSE IS FINE-TUNED FOR LIFE

Chance?

IS THE FINE-TUNING DUE TO CHANCE?

We've already seen the astronomical odds (no pun intended) of some of the various cosmological constants having precisely the values that they do. Still, some will say, "The fact that we're here to observe our universe proves that we beat the odds. It all arose by chance."

This is question begging. The extreme improbability of all these constants having the precise values that they do cries for an explanation other than "chance."

THE UNIVERSE IS FINE-TUNED FOR LIFE



Imagine a firing squad with dozens of expert marksmen. You hear the orders: "Ready! Aim! Fire!" Then the shots ring out. But to your surprise, every single bullet misses. While you could say it was just a matter of dumb luck that you survived. After all, had you not survived you wouldn't be around to contemplate anything. Or given the enormous improbability that all the marksmen missed, you would be justified in wondering if they missed by design.

The precision of all the constants of the universe is even more remarkable than all these marksmen missing their target.

THE UNIVERSE IS FINE-TUNED FOR LIFE

“

**ONE FAMOUS
FORMER
ATHEIST**



I now believe that the universe was brought into existence by an infinite Intelligence. I believe that this universe's intricate laws manifest what scientists have called the Mind of God. I believe that life and reproduction originate in a divine Source. Why do I believe this, given that I expounded and defended atheism for more than a half century? The short answer is this: this is the world picture, as I see it, that has emerged from modern science.

ANTHONY FLEW, "THERE IS A GOD"

Step Two

WE CAN RULE OUT NECESSITY & CHANCE



The fine-tuning of the universe is due to either physical necessity, chance, or design.

...



It is not due to physical necessity or chance.

...



Therefore, it is due to design.

Step Three

IT'S REASONABLE TO CONCLUDE THAT THE UNIVERSE WAS DESIGNED



The fine-tuning of the universe is due to either physical necessity, chance, or design.

...



It is not due to physical necessity or chance.

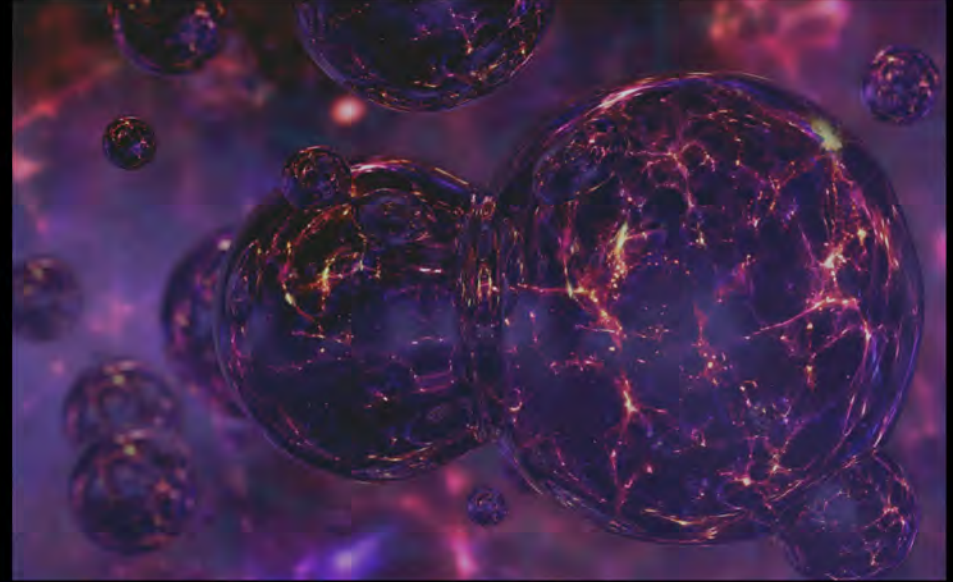
...



Therefore, it is due to design.

BUT WHAT ABOUT THE MULTIVERSE?

The multiverse is a hypothetical group of multiple universes.



COULDN'T IT EXPLAIN THE DESIGN IN OURS?

If the multiverse is churning out all types of universes, then one like ours is bound to exist.

Three Facts About the Multiverse



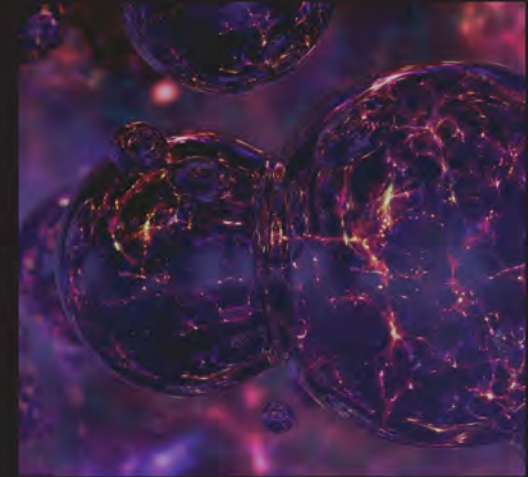
IT'S A HYPOTHESIS

The multiverse exists as a possibility. But that doesn't mean it exists in reality.



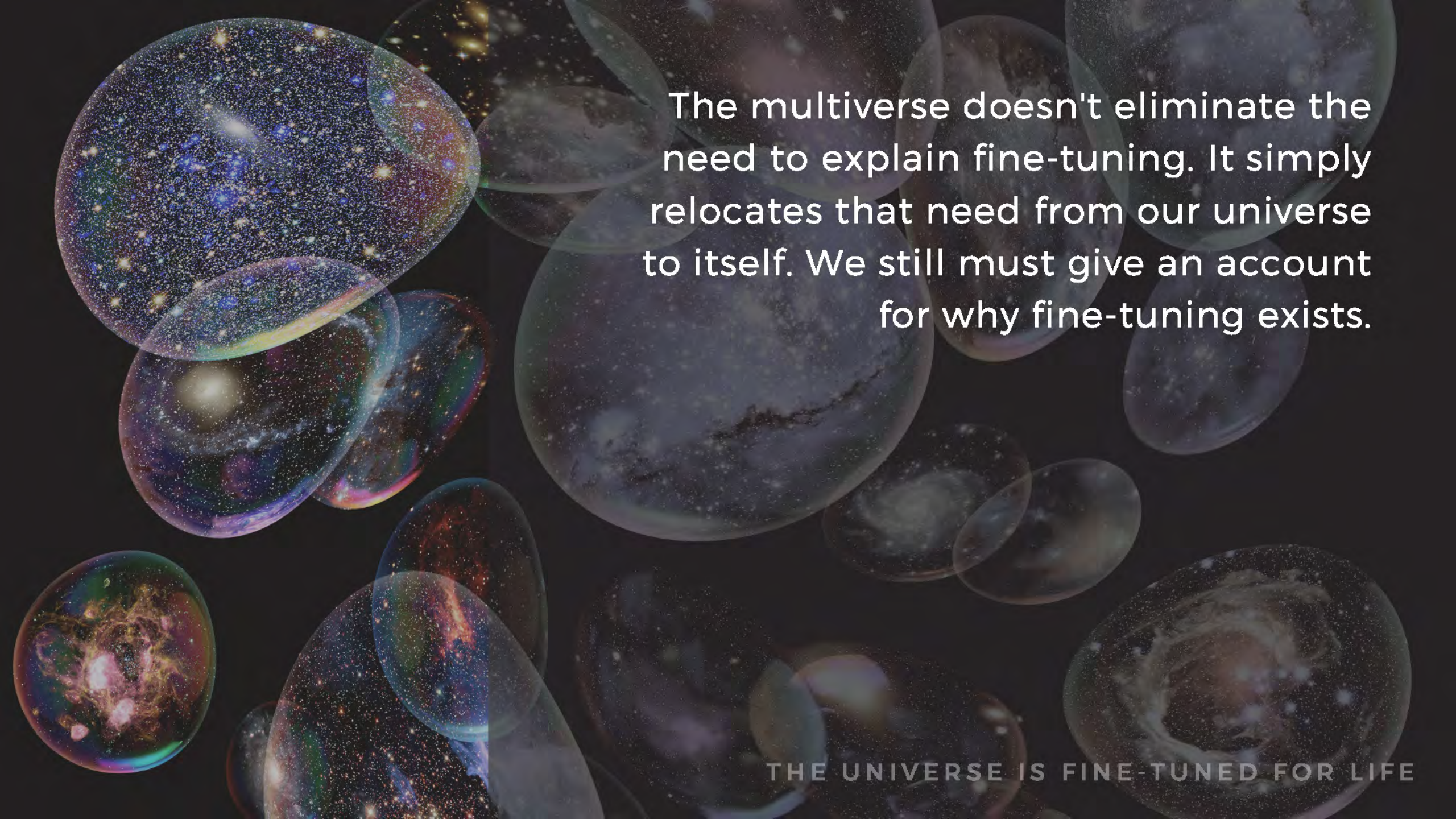
IT'S UNOBSERVABLE

Even if parallel universes existed, they would not be observable from ours.



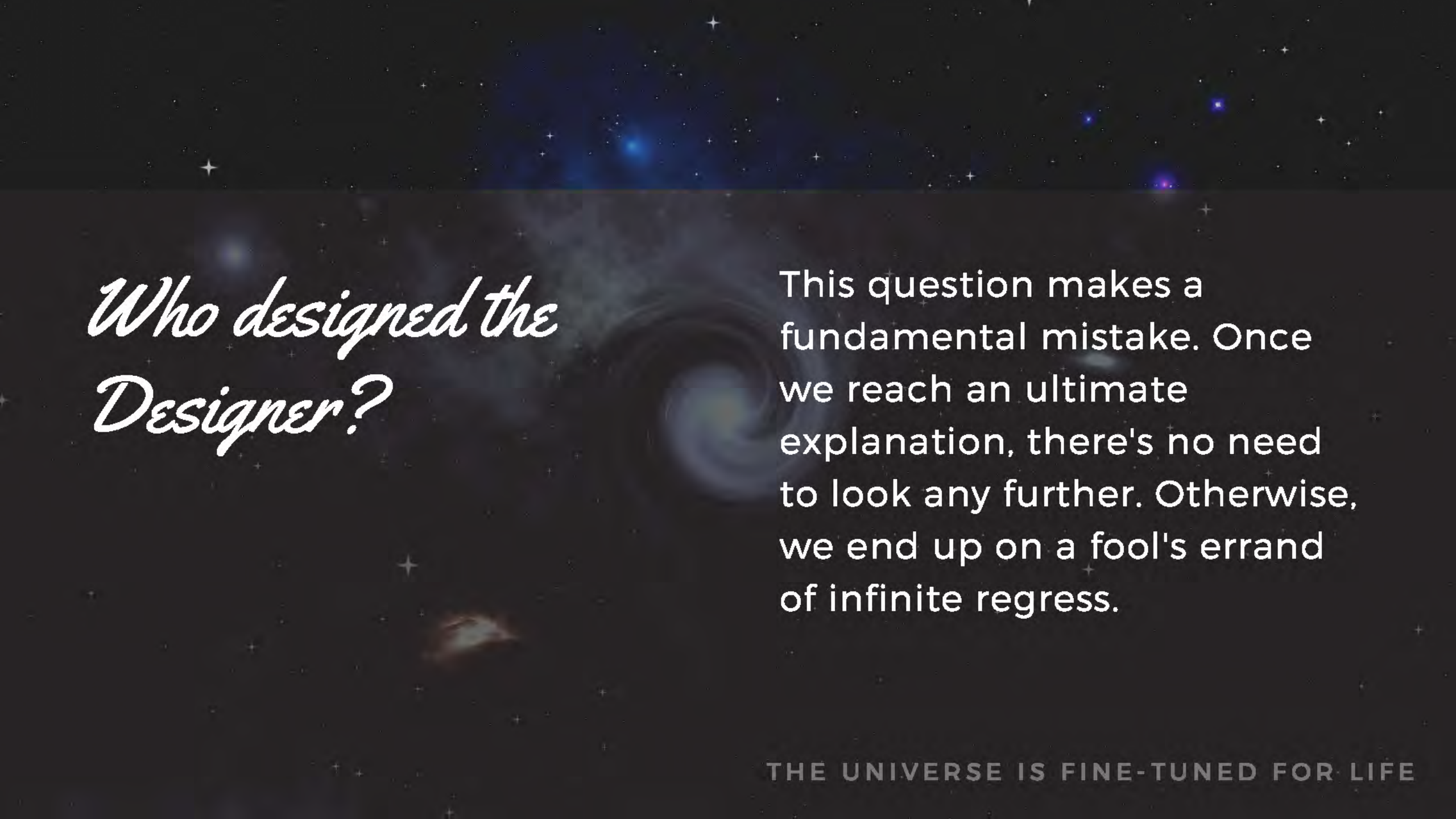
IT WOULD NEED FINE-TUNING

Any entity that could generate universes would require fine-tuning itself.



The multiverse doesn't eliminate the need to explain fine-tuning. It simply relocates that need from our universe to itself. We still must give an account for why fine-tuning exists.

THE UNIVERSE IS FINE-TUNED FOR LIFE

The background of the slide is a deep space image. It features a dark, star-filled sky with numerous small, bright stars. In the center, there is a prominent spiral nebula with a bright core and swirling arms. To the left, there is a smaller, more diffuse nebula. The overall color palette is dominated by dark blues, blacks, and whites, with some hints of purple and orange from the nebulae.

Who designed the Designer?

This question makes a fundamental mistake. Once we reach an ultimate explanation, there's no need to look any further. Otherwise, we end up on a fool's errand of infinite regress.

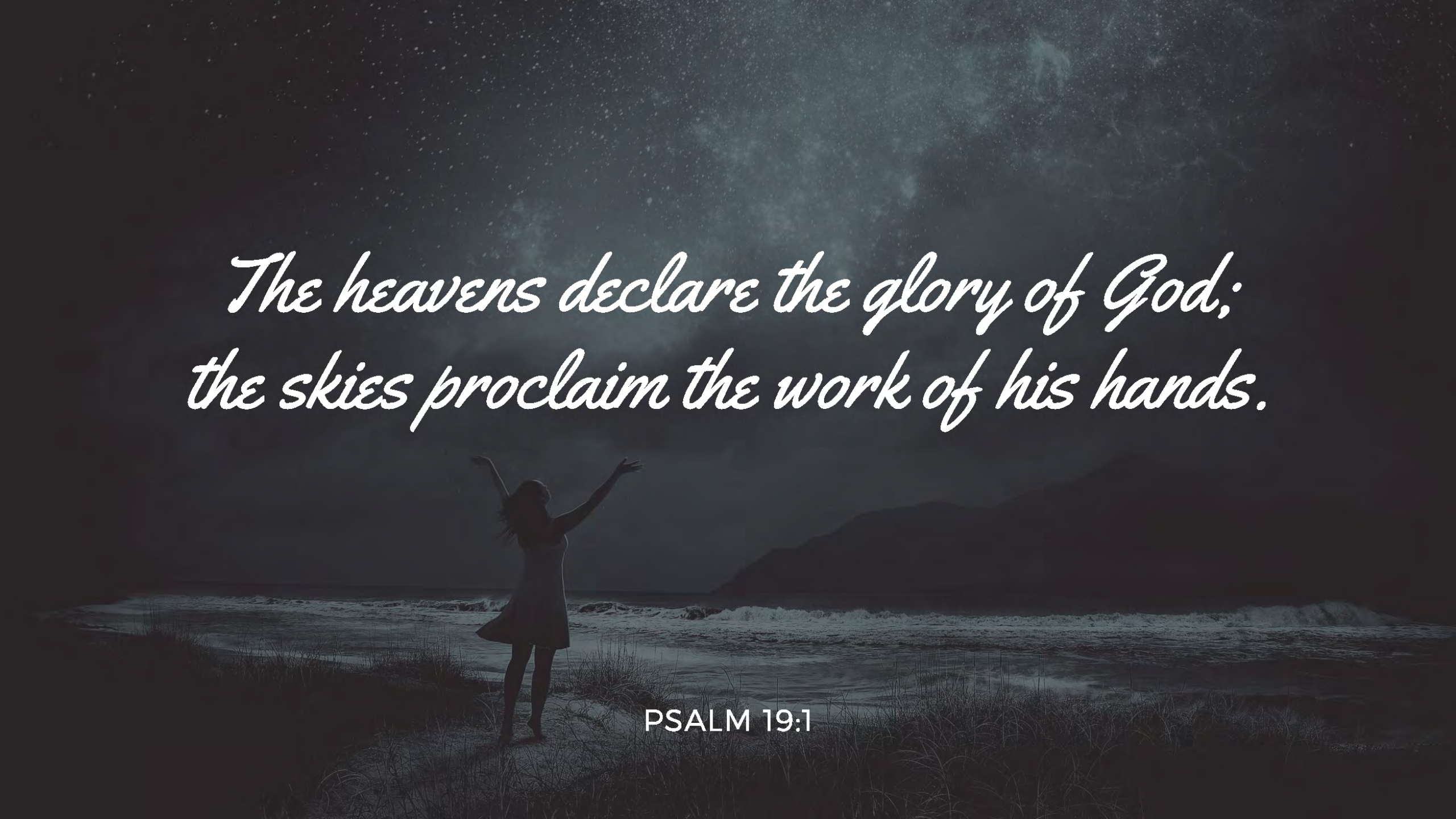
WHEN WE LOOK AT THE
PHYSICAL CONSTANTS AND
CONDITIONS OF OUR UNIVERSE,
WE SEE EVIDENCE OF FINE-
TUNING. THINGS ARE
PERFECTLY BALANCED FOR LIFE
ON EARTH. SCIENTISTS OF ALL
WORLDVIEWS AGREE. THE
QUESTION, THEN, IS HOW DO
WE ACCOUNT FOR THIS?
PHYSICAL NECESSITY? CHANCE?
OR DESIGN?



COULD IT BE THAT DESIGN IS
THE BEST EXPLANATION? WE
THINK THE ANSWER IS "YES."

AN ENORMOUSLY POWERFUL
MIND BALANCED THINGS IN
SUCH A WAY NOT ONLY TO
MAKE LIFE POSSIBLE IN THE
UNIVERSE BUT ALSO TO GIVE US
A CLUE OF HIS EXISTENCE.





*The heavens declare the glory of God;
the skies proclaim the work of his hands.*

PSALM 19:1