RABBI AARON ZIMMER

PHYSICIST, ORDAINED RABBI, COMMODITY TRADER, UNRAVELER OF THE ENIGMAS OF THE UNIVERSE, COHOST OF "PHYSICS TO GOD" PODCAST

After earning a physics degree and receiving rabbinical ordination from his rebbe, Rabbi Yisrael Chait, Aaron Zimmer considered furthering his education through graduate school. However, his intellectual curiosity extended far beyond the realm of physics, encompassing a diverse array of fields, including philosophy, mathematics, and psychology. Capitalizing on his blend of analytical and philosophical skills, Aaron ventured into commodity futures trading. He rooted his strategic approach in the conceptual frameworks of physics and the intricate Brisker Method for Talmudic analysis. After eleven years of success in this field, Aaron decided to retire.

Aaron now channels his intellectual energy into studying various branches of knowledge, including the Talmud and physics, as well as lecturing at Yeshiva Bnei Torah. He lives in Lawrence, New York, with his wife and their five children.

Aaron shares his passion for knowledge through many years of collaboration with rabbi and mathematician, Elie Feder, on the podcast, "Physics to God." They invite listeners on a journey through the intricacies of modern physics, revealing the concept of God. Comprising several thought- provoking miniseries, it presents an argument for God based on the meticulously ordered initial conditions of the universe. A related miniseries lucidly explains the concept of God as an uncaused, simple existence, systematically addressing and refuting common doubts and misconceptions about God.

"Physics to God" pairs depth with accessibility, unraveling the profound enigmas of the universe while making complex physics concepts comprehensible through intuitive analogies, serving both the expert and the layman. For insightful episodes and in-depth exploration, please visit PhysicsToGod.com.

Physics to God: The Ordered Initial Conditions of the Universe

RABBI AARON ZIMMER

What would it take to persuade you that the universe was crafted by an intelligent creator? Imagine if I were to present a series of rigorous scientific computations demonstrating that the observed order in the universe strongly suggests the handiwork of an intelligent entity. People have done this based on the principles of entropy and an analysis of the remarkable initial conditions of our universe.

First, we need to explore a physics concept called *entropy*. Any system, from a book to the universe, exists in a particular state with distinct emergent properties. An ordered state arises from a specific arrangement of components, creating an emergent property like the book's meaning. A disordered state, however, occurs from a random arrangement that results in no meaningful emergent property.

Entropy is a measure of this order. High entropy signifies a disordered state; low entropy, an ordered one. According to the Second Law of Thermodynamics, all systems evolve toward higher entropy, or disorder, over time. This means that if a system is in a state of low entropy now, it must have started with even lower entropy.

When examining the universe, we might have expected it to be in a high entropy state, which after all, is its most likely state. If that were the case, we would see a universe filled with high entropy objects (like black holes). But instead, we observe the exact opposite! We see galaxies, stars, planets, life, etc.

The Second Law of Thermodynamics suggests that the low entropy state of the universe today means that it began in an even more unlikely, lower entropy state. This shifts the focus to the highly ordered, extraordinarily unlikely, state with which our universe began.

Renowned physicist Roger Penrose calculated that the chance of our universe beginning with such low entropy is about 1 in $10^{10^{123}}$, an inconceivably low probability.[1] This is much less likely than finding a needle in a haystack the size of the known universe. If our universe hadn't started with these incredibly unlikely conditions, the subsequent evolution wouldn't have resulted in the complex universe we observe today. Instead, it would have yielded an uninteresting black hole- ridden realm.

This exceedingly improbable scenario directs us to the clear conclusion that the initial conditions of our universe were not a matter of random chance. Rather, they were purposely arranged to allow for the emergence of an ordered and complex universe, something that would be impossible had the universe begun in a high entropy, disordered state.

Just as a perfectly ordered book suggests the presence of an intelligent author, the universe's highly ordered initial conditions suggest the existence of an *intelligent orderer*, as intelligence involves the ability to choose one possibility among many to achieve a specific goal. Therefore, considering the overwhelming odds against a random, low entropy beginning and the elegant order we observe today, it is compelling to conclude that our universe is not the product of chance, but of an intelligent God.

Footnotes:

1. Roger Penrose, *The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics* (1989), p. 179.