

IMPOSSIBLE ODDS

OUR FINELY TUNED UNIVERSE

The odds against a universe like ours coming into existence by chance are staggering. Here is a small collection of many finely tuned attributes of our universe. They cannot be explained by chance, yet if they were any different, our cosmos could not exist as we know it.

THE STRONG FORCE

If the “strong force” holding the nuclei of atoms together were slightly stronger, the fusion that creates stars would be impossible. Yet, if that force were slightly weaker, the universe would have no larger elements that make life possible.

THE MASSES OF THE PROTON, NEUTRON, AND ELECTRON

These particles have very carefully tuned masses in respect to each other. Were the ratios of their masses to each other any different, either the universe would not support life, or no atoms would form at all.

THE PRECISION OF THE BIG BANG

The odds of the conditions being just right during the Big Bang to produce our universe are 1 in $10^{10^{123}}$ —a number with one quadragintillion zeros. These odds are as close to zero as one could ever imagine.

THE COSMOLOGICAL CONSTANT

The universe expands at a rate governed by a number that is astonishingly close to zero. Were it the smallest fraction larger, the universe would have expanded too quickly for stars and galaxies to form.

Such “just right” conditions in our universe moved astronomer Fred Hoyle to famously claim, “A common sense interpretation of the facts suggests that a super intellect has monkeyed with physics, as well as with chemistry and biology, and that there are no blind forces worth speaking about in nature.”