EL REINO DE LO INVISIBLE · EPISODE 7

Are We Swimming in It? The Dark Matter Passing Through Your Body Right Now

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Imagine for a second that you are in a completely dark room. You see nothing, but you feel a weight in the air, a presence you cannot touch or smell. Now, you turn on the light and, to your surprise, the room still looks empty. However, something tells you it is not. Well, let me tell you that this is not a horror story; it is the reality of every second of your life. At this very moment, as you read this or hear my voice, billions of invisible particles are passing through your eyes, your heart, and your lungs without asking permission. You don't feel them, you don't see them, and the most brilliant scientists in the world have spent decades trying to catch a single one of them without success.

Welcome to episode 7 of 'The Realm of the Invisible'. Today we are going to talk about dark matter and its strange cousin, dark energy. But we are not going to talk about distant galaxies or giant telescopes (well, maybe a little), but about you. About how your body is, in reality, a transit hotel for the most elusive ghosts in the cosmos. To give you an idea of the magnitude of this mystery, consider the following:

- Everything you see around you—the stars, the planets, your cat, this screen, and even yourself—represents barely 5% of what exists in the universe.
- The rest, an overwhelming 95%, is something we call 'dark' simply because we have no idea what it is, other than the fact that it doesn't interact with light.
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> Dark matter acts like an invisible cosmic glue, while dark energy functions like an engine stretching space itself.

It is as if we were trying to understand how an ocean works by looking only at the foam on the waves, ignoring the thousands of meters of depth below. But what if I told you that this 'depth' is flowing through your veins right now? Is it possible that we are literally swimming in a sea of ghostly particles without having realized it in all of human history? And most disturbing of all: is there any place in the entire vast universe where we can hide from them, or are we condemned to always be inhabited by the invisible?

The Invisible Scaffolding of Reality

To understand why we say dark matter is in your body, we first have to understand why we know it exists. Imagine you are on a merry-go-round. The horses spin around and around, and you know they stay in place because they are bolted to the central structure. If suddenly the merry-go-round started spinning at a thousand miles per hour, the bolts would break and the horses would fly off, right? Well, when astronomers like Vera Rubin observed galaxies in the 1970s, they realized something terrifying: galaxies spin so fast that, according to the laws of physics we know, they should fall apart. The stars at the edges should fly off like the horses on a broken merry-go-round.

But they don't. Something holds them together. Something that weighs a lot, that generates massive gravity, but doesn't emit a single spark of light. It's not dust, it's not dark planets, it's not black holes (at least not the ones we know). It is dark matter. It's as if the universe were a building where we only see the furniture, but the foundations, the beams, and the concrete are invisible. That invisible concrete is everywhere, including the space between your atoms.

How can something pass through me and I feel nothing?

This is where things get truly strange. We are used to things colliding. If you try to walk through a wall, you're going to get hit. But that happens because the electrons in your atoms repel the electrons in the wall. It's a battle of electric forces. Dark matter, however, is the ultimate 'introvert' of the universe. It doesn't care about electric force. It doesn't care about light. It only cares about gravity.

To a dark matter particle (which scientists call WIMPs, or Weakly Interacting Massive Particles), your body is not a solid object. Your body is like a forest where the trees are separated by millions of miles. The particle simply passes through the gaps. It is estimated that every second, millions of these particles pass through every square inch of your skin. You are being traversed by cosmic ghosts while you eat breakfast, while you sleep, and while you love. You feel nothing because the probability of one of those

particles hitting the nucleus of one of your atoms is almost zero. It's like trying to fire a bullet through a galaxy and hoping it hits a specific planet.

Dark Energy: The Stretching Fabric

If dark matter is the glue, dark energy is the 'scarecrow' pushing everything outward. Imagine you are inflating a balloon. The little dots you drew on the balloon move away from each other not because they are moving on their own, but because the rubber of the balloon is stretching. Dark energy is that mysterious force that is stretching the 'balloon' of our universe at an ever-increasing speed.

Is dark energy inside your body? Technically, yes. It's in every millimeter of empty space. But there is a key difference: at short distances, such as the size of a human being or even a galaxy, gravity and atomic forces are much, much stronger. Dark energy only wins the fight in the vast spaces between galaxies. So don't worry, you're not going to 'expand' and explode because of dark energy. Your atoms are held tightly together, completely ignoring the subtle push of this energy that dominates the cosmos.

Is there any place where they aren't?

This is the million-dollar question. If dark matter and dark energy are so dominant, is there any refuge? The short answer is: not really, but their distribution is not equal. Dark matter prefers company. It clusters in large 'halos' around galaxies. In fact, galaxies formed inside puddles of dark matter. Without it, we wouldn't be here. On the other hand, there are immense cosmic voids where there are almost no galaxies; there, dark matter is very scarce, but dark energy reigns supreme.

Even if you went to the loneliest corner of intergalactic space, dark energy would be there, pushing space. And even if you could travel to a place where the density of dark matter is extremely low, there would always be some ghostly particle crossing your path. There is no escape. We have been submerged in this invisible ocean since the Big Bang.

The Search in Absolute Silence

To try to detect these ghosts, scientists have built incredible laboratories in the most isolated places on Earth. They go to the bottom of abandoned gold mines or under giant mountains, like the Gran Sasso laboratory in Italy. Why? Because they need to use the Earth itself as a shield. Solid rock stops normal radiation but lets dark matter through. Down there, in the deepest silence, they hope a dark matter particle will finally decide to 'say hello' and hit a liquid xenon sensor.

So far, the silence has been total. But that silence tells us a lot. It tells us that the Realm of the Invisible is much more subtle than we imagine. We are learning to listen to the whispers of a universe that does not let itself be seen, but that holds us in its invisible hands.

A final reflection for your next walk

Next time you go for a walk at night and look at the stars, remember that you are not looking at the whole stage. You are only seeing the fireworks, but not the air that supports them or the hand that launched them. Your body, that wonder of carbon and water, is a silent witness to the greatest dance of creation. You are connected to the depths of the cosmos in a way so intimate it passes through your own cells.

We are not isolated beings in a black void. We are part of an invisible web, a cosmic fabric that we are only beginning to decipher. What would happen if one day we manage to interact with that matter? What secrets would it tell us about the origin of everything we know? For now, we are left with the wonder of knowing that, at this very moment, the entire universe is flowing through you. In the next episode, we are going to descend even deeper into this realm to discover what happens when time itself decides to behave in a strange way. Are you ready to lose track of the clock?