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Freaky Physics Proves Parallel Universes Exist

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Look past the details of a wonky discovery by a group of California scientists -- that a quantum state is now observable with the human eye -- and consider its implications: Time travel may be feasible. Doc Brown would be proud.

The strange discovery by quantum physicists at the University of California Santa Barbara means that an object you can see in front of you may exist simultaneously in a parallel universe -- a multi-state condition that has scientists theorizing that traveling through time may be much more than just the plaything of science fiction writers.

And it's all because of a tiny bit of metal -- a "paddle" about the width of a human hair, an item that is incredibly small but still something you can see with the naked eye.

UC Santa Barbara's Andrew Cleland cooled that paddle in a refrigerator, dimmed the lights and, under a special bell jar, sucked out all the air to eliminate vibrations. He then plucked it like a tuning fork and noted that it moved and stood still *at the same time*.

That sounds contradictory, and it's nearly impossible to understand if your last name isn't Einstein. But it actually happened. It's a freaky fact that's at the heart of quantum mechanics.

How Is That Possible?

To even try to understand it, you have to think really, really small. Smaller than an atom. Electrons, which circle the nucleus of an atom, are swirling around in multiple states at the same time -- they're hard to pin down. It's only when we measure the position of an electron that we force it to have a specific location. Cleland's breakthrough lies in taking that hard-to-grasp yet true fact about the atomic particle and applying it to something visible with the naked eye.

What does it all mean? Let's say you're in Oklahoma visiting your aunt. But in another universe, where your atomic particles just can't keep up, you're actually at home watching "The Simpsons." That may sound far-fetched, but it's based on real science.

"When you observe something in one state, one theory is it split the universe into two parts," Cleland told FoxNews.com, trying to explain how there can be multiple universes and we can see only one of them.

The multi-verse theory says the entire universe "freezes" during observation, and we see only one reality. You see a soccer ball flying through the air, but maybe in a second universe the ball has dropped already. Or you were looking the other way. Or they don't even play soccer over there.

Sean Carroll, a physicist at the California Institute of Technology and a popular author, accepts the scientific basis for the multi-verse -- even if it cannot be proven.

"Unless you can imagine some super-advanced alien civilization that has figured this out, we aren't affected by the possible existence of other universes," Carroll said. But he does think "someone could devise a machine that lets one universe communicate with another."

It all comes down to how we understand time.

Carroll suggests that we don't exactly feel time -- we perceive its passing. For example, time moves fast on a rollercoaster and very slowly during a dull college lecture. It races when you're late for work . . . but the last few minutes before quitting time seem like hours.

Back to the Future

"Time seems to be a one-way street that runs from the past to the present," says Fred Alan Wolf, a.k.a. Dr. Quantum, a physicist and author. "But take into consideration theories that look at the level of quantum fields ... particles that travel both forward and backward in time. If we leave out the forward-and-backwards-in-time part, we miss out on some of the physics."

Wolf says that time -- at least in quantum mechanics -- doesn't move straight like an arrow. It zig-zags, and he thinks it may be possible to build a machine that lets you bend time.

Consider Sergei Krikalev, the Russian astronaut who flew six space missions. Richard Gott, a physicist at Princeton University, says Krikalev aged 1/48th of a second less than the rest of us because he orbited at very high speeds. And to age less than someone means you've jumped into the future -- you did not experience the same present. In a sense, he says, Krikalev time-traveled to the future -- and back again!

"Newton said all time is universal and all clocks tick the same way," Gott says. "Now with Einstein's theory of Special Relativity we know that travel into the future is possible. With Einstein's theory of gravity, the laws of physics as we understand them today suggest that even time travel to the past is possible in principle. But to see whether time travel to the past can actually be realized we may have to learn new laws of physics that step in at the quantum level."

And for that, you start with a very tiny paddle in a bell jar.

Cleland has proved that quantum mechanics scale to slightly larger sizes. The next challenge is to learn how to control quantum mechanics and use it for even larger objects. Do so -- and we might be able to warp to parallel universes just by manipulating a few electrons.

"Our concepts of cause and effect will fly out the window," says Ben Bova, the science fiction author. "People will -- for various reasons -- try to fix the past or escape into the future. But we may never notice these effects, if the universe actually diverges. Maybe somebody already has invented a time machine and our history is being constantly altered, but we don't notice the kinks in our path through time."