



## Teleportation: Express Lane Space Travel

By [Leonard David](#)

Senior Space Writer [www.space.com](http://www.space.com)

posted: 08 July 2005

Think Star Trek: You are here. You want to go there. It's just a matter of teleportation.

Thanks to lab experiments, there is growth in the number of "beam me up" believers, but there is an equal amount of disbelief, too.

Over the last few years, however, researchers have successfully teleported beams of light across a laboratory bench. Also, the quantum state of a trapped calcium ion to another calcium ion has been teleported in a controlled way.

These and other experiments all make for heady and heavy reading in scientific journals. The reports would have surely found a spot on Einstein's night table. For the most part, it's an exotic amalgam of things like quantum this and quantum that, wave function, qubits and polarization, as well as uncertainty principle, excited states and entanglement.

Seemingly, milking all this highbrow physics to flesh out point-to-point human teleportation is a long, long way off.

Well, maybe...maybe not.

### A trillion trillion atoms

In his new book, *Teleportation – The Impossible Leap*, published by John Wiley & Sons, Inc., writer David Darling contends that "One way or another, teleportation is going to play a major role in all our futures. It will be a fundamental process at the heart of quantum

computers, which will themselves radically change the world."

Darling suggests that some form of classical teleportation and replication for inanimate objects also seems inevitable. But whether humans can make the leap, well, that remains to be seen.

Teleporting a person would require a machine that isolates, appraises, and keeps track of over a trillion trillion atoms that constitute the human body, then sends that data to another locale for reassembly—and hopefully without mussing up your physical and mental makeup.

"One thing is certain: if that impossible leap turns out to be merely difficult—a question of simply overcoming technical challenges—it will someday be accomplished," Darling predicts.

In this regard, Darling writes that the quantum computer "is the joker in the deck, the factor that changes the rules of what is and isn't possible."

Just last month, in fact, scientists at Hewlett Packard announced that they've hammered out a new tactic for a creating a quantum computer—using switches of light beams rather than today's run of the mill, transistor-laden devices. What's in the offing is hardware capable of making calculations billions of times faster than any silicon-based computer.

Given quantum computers and the networking of these devices, Darling senses the day may not be far off for routine teleportation of individual atoms and molecules. That would lead to teleportation of macromolecules and microbes...with, perhaps, human teleportation to follow.

### Space teleportation

What could teleportation do for future space endeavors?

"We can see the first glimmerings of teleportation in space exploration today," said Darling, responding to questions sent via e-mail by *SPACE.com* to his home office near Dundee, Scotland.

"Strictly speaking, teleportation is about getting from A to B without passing through the points between A and B. In other words, something dematerializes in one place, then simply rematerializes somewhere else," Darling said.

Darling pointed out that the Spirit and Opportunity rovers had to get to Mars by conventional means. However, their mission and actions are controlled by commands sent from Earth.

"So by beaming up instructions, we effectively complete the configuration of the spacecraft. Also, the camera eyes and other equipment of the rovers serve as vicarious extensions of our own senses. So you might say the effect is as if we had personally teleported to the Martian surface," Darling said.

### **Spooky action at a distance**

In the future it might be possible to assemble spacecraft "on-the-spot" using local materials. "That would be a further step along the road to true teleportation," Darling added.

To take this idea to its logical endpoint, Darling continued, that's when nanotechnology enters the scene.

When nanotechnology is mature, an automated assembly unit could be sent to a destination. On arrival, it would build the required robot explorer from the molecular level up.

"Bona fide quantum teleportation, as applied to space travel, would mean sending a supply of entangled particles to the target world then use what Einstein called 'spooky action at a distance' to make these particles assume the exact state of another collection of entangled particles back on Earth," Darling speculated.

Doing so opens the prospect for genuinely teleporting a robot vehicle—or even an entire human crew—across interplanetary or, in the long run, across interstellar distances, Darling said.

"Certainly, if it becomes possible to teleport humans," Darling said, "you can

envisage people hopping to the Moon or to other parts of the solar system, as quickly and as easily as we move data around the Internet today."

### **UFO connection?**

If indeed we are to become a space teleporting civilization, what about other advanced civilizations circling distant stars? Perhaps they have already mastered mass transportation via teleportation?

One might even be drawn to consider that mode of travel in connection with purported UFO visitation of Earth.

"Any strange comings and goings are candidates for teleportation, although you would obviously have to eliminate all mundane explanations first," Darling responded. "According to reports, some UFOs do appear and disappear quite abruptly, which would fit in with the basic idea of teleportation," he said.

Darling said that interstellar teleportation would be one way to circumvent the light barrier, "although, as we understand the process now, you would need to make a sub-light trip first to set up the teleportation receiver and assembler at the destination."

Quantum teleportation, Darling pointed out is the kind we can do at the subatomic level in the lab today. And that requires equipment at both ends to be able to work.

"Extraterrestrial intelligence that is thousands or millions of years ahead of us will certainly be teleportation experts," Darling advised, "if the technology can be implemented at the macroscopic biological level."

What possible outcome, then, from ET successfully tinkering with teleportation?

"We might expect advanced aliens to be occasionally beaming in to check on our progress as a species," Darling concluded.

[www.space.com](http://www.space.com)