

Teleportation in Denmark: One quantum leap for mankind

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Quantum teleportation is not only theoretically possible, but recent developments have made it a scientific reality.

Eugene Polzik and his colleagues at the Niels Bohr Institute in Denmark managed to teleport information over the distance of half a meter. "For the first time it involves teleportation between light and matter, two different objects. One is the carrier of information and the other one is the storage medium," explained Polzik. "Since the information is carried by a light pulse, this distance [of half a meter] can be increased because a light pulse, obviously, can travel for a very large distance."

The recent boom in teleportation research began in the early nineties. In June 2002 scientists in Australia managed to teleport a few photons of a laser beam. In 2004, scientists working independently in the US and Austria achieved teleportation of a single atom over the distance of a few micrometers. The latest development is published in the October 4 issue of scientific journal, *Nature* (available in the periodical section of the library).

In the present experiment, the fidelity (quality) of the signal was 60%. This is well above that of a simple telephone, but not quite the fidelity you would trust for beaming people around the universe. In an interview aired on the *Nature Podcast*, Polzik clarified, "I wouldn't promise Captain Kirk [style teleportation] anytime soon. And this is not actually the goal of physicists, as far as I know." Instead, the focus is on its application for computers and communication.

What are the advantages of quantum computing? Information can be processed many times faster than current technology, and information can be stored at the atomic level, which means more data will fit on very small media. It also offers unprecedented privacy in communication, i.e. quantum cryptography. Unlike traditional means of communication (e.g. Internet, telephone, radio, etc.) messages can be sent over long distances without the possibility of eavesdropping.

Sources:

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Original report:

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