

Report: Scientists 'teleport' two photons

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Scientists in Germany say they have successfully teleported the combined quantum state of two photons.

That achievement is said to be the first for a composite system, and the researchers say their approach could lead to new ways to harness quantum effects for communication and computational purposes.

A quantum-mechanical system is characterized by a set of properties that can exist in certain possible states. For example, one property of a photon is polarization, the state of which can be horizontal, vertical or a mixture of the two. Quantum teleportation transfers the state -- in this case of the polarization -- of one object to another, which can be an arbitrary distance away.

Teleportation does not transfer energy or matter, the scientists noted.

Teleportation of quantum states involving more than one particle -- as now shown by Qiang Zhang and colleagues in the Physics Institute at the University of Heidelberg -- promise secure information exchange and the ability to solve certain tasks faster than any classical computer.

The authors' experiment lasted several days, but with further improvements they say their process might become of more practical value.

The research is reported in the current issue of the journal *Nature Physics*.

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